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HIDATSA I: MORPHOPHONEMICS

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0.1. Acknowledgements
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0.1. In this paper, as in those which are to follow in subsequent issues of the Journal, I cite forms obtained chiefly from two middle-aged speakers of Hidatsa, a woman (1954 Linguistic Institute) and a man (1954 field trip). I also cite occasional forms obtained only from the Hidatsa texts published by Harris and Voegelin[1a] and from their extensive manuscript materials. But I cite many forms which appear both in my manuscripts and in the Harris and Voegelin manuscripts. The latter contain lexical and paradigmatic lists, as well as additional texts frequently with accompanying phonograph records which made possible a rehearing of the texts. This earlier material represents the speech of a young man (1938 Linguistic Institute) and of an elderly woman (1938 field trip). These materials were recorded separately even when their authors had the opportunity to work together. The two independent corpora were entrusted to me by Zellig S. Harris and C. F. Voegelin; my thanks are due to both for this extraordinary help, and, in addition, to the latter for directing me in a doctoral dissertation.

[1a] Zellig Harris and C. F. Voegelin, Hidatsa Texts Collected by Robert H. Lowie With Grammatical Notes and Phonograph Transcriptions, Prehistory Research Series of the Indiana Historical Society, 1.173–239 (1939).

Almost all of the material which I obtained from informants was recorded on tape. I used one or two magnetic recorders in all informant sessions and frequently did not slow down to record citation forms; rather, I encouraged informants to speak at their normal speed and later transcribed such speech from repeated playbacks.

0.2. Rather than repeat the allophonic details of Hidatsa already given by my predecessors, I shall postpone a detailed presentation of Hidatsa phonemes until I have the opportunity to study more extensively the tape recordings made during field work.

My alignment of allophones into phonemes agrees with that of Voegelin and Harris. However, alternative solutions are possible for certain parts of the phonemic system.

The stops and fricatives of Hidatsa may be phonemicized as two series, lenis and fortis (= aspirated)—this is the Voegelin and Harris solution. Or, alternatively, they may be phonemicized as one series, that termed lenis above. The remaining series, which is phonetically long and usually aspirated, may then be treated as consisting of phonemic clusters, either of identical consonants or of stop or fricative plus /h/.

I follow the analysis of a single series which may appear in clusters with /h/. I am here influenced by morphophonemic considerations; with the analysis of two contrasting phonemic series, an additional morphophonemic statement would be necessary to cover the juxtaposition of stops or fricatives and /h/ at morpheme boundaries.

Voegelin and Harris left open the ques-

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tion of the phonemic status of three-mora vowel length because of its variation with two-mora length. I am inclined to give phonemic status to the three-mora length, on the basis of contrasts appearing between it and two-mora length (as wá:ra *winter*, wá·ra *my arm*) in one style of speech; although in another style of speech the contrast does not appear. (For the effect of styles of speech on vowel length, see **1.3.**, below.)

To Voegelin and Harris' phonemic inventory I add three junctures: /+/ phrase or word internal (phonetically a brief pause); /‖/ phrase final (phonetically a brief pause and a slight rise in tone on the preceding one or two syllables); and /#/ utterance final (phonetically pause and descending tone on the preceding one or two syllables).

The following orthography[1b] will serve for morphemic and morphophonemic analysis. Consonants: stops: p, t, c, k, ʔ; fricatives: š, x, h; liquids: w, r; vowels: i, e, a, o, u; non-segmental: /'/ primary stress, /·/ two-mora vocalic length, /:/ three-mora vocalic length, and the three junctures mentioned above: /+/, /‖/ and /#/.

1.0. Two types of morphophonemic variation occur in Hidatsa. One shows differences in the number of segmental phonemes in the alternants of particular morphemes, hence, the alternants are of different lengths. In the other type, the alternants are of the same length; differences appear by virtue of substitution of phonemes. Style, position of the morpheme in respect to particular phonemes or in respect to particular other morphemes are the variables associated with each of these morphophonemic types.

General rules will be stated for variation which is determined by position in respect to particular adjacent phonemes for most morphemes—i.e., for wholly or generally unrestricted sets of morphemes. For variation in restricted sets of morphemes determined by phonemic environment, special symbols will be used. Besides such symbols, numbers are used to index morphemes; some of the index numbers include sub-numbers (numbers after decimal points) which serve to identify alternants determined by position in respect to particular morphemes rather than by phonemic environment.

1.1. The same alphabetic letters serve both for phonemic and for morphophonemic orthography; i.e. in morphophonemic writing, all the symbols used in phonemic writing are employed with their regular phonemic values. In addition, the symbols given in the following section are employed for variation in restricted sets of morphemes.

Capital Š is used when a given morpheme shows /c/ preceding morpheme initial /h/ but /š/ elsewhere. Thus, we write morphophonemically réŠA-for a stem which appears in phonemic réšac *it's nothing* and réche·c *he used it up*.[1c] The only other examples in the sample are the stem written morphophonemically iruxíŠI-, which appears in iruxíšic *it's soaked* and iruxíche·c *he soaked it*, and the stem written morphophonemically xí·ŠI-, which appears in xí·šic *he's tired* and xí·che·c *it makes him tired*.

Capitals I and A are used for vowels which are phonemically /i/ and /a/ in some environments and absent in others. These morphophonemes occur only as stem final vowels; they are phonemically actualized except when followed by the causative suffix (1021),[2] or the imperative singular suffix (1282). The morphophonemes I and

[1b] For the phonetic values of all the symbols except those for the three-mora length and the junctures discussed above see pp. 183–184 of Harris and Voegelin, op. cit.

[1c] Exemplification in this chapter is based on a sample of about 800 inflected themes originally transcribed on slips by Voegelin and Harris in 1938 and recorded on tape by me in 1953, together with supplementary elicited forms. All the examples for each morphophonemic change obtained from this sample are cited, except where such changes are stated in terms of rules.

[2] Numbers given in parentheses after affixes are the index numbers assigned to them in **2**, to be published in a later issue of IJAL.

A will hereafter be referred to as weak vowels.

Examples are listed here with the morphophonemic shape of the theme given first (in brackets), followed by forms showing its two phonemic shapes. The formula for the morphemic composition of each phonemically written form is given in parentheses after it. In all such formulae T stands for theme. A few affixes occur in most of the examples listed below. They are: prefix or suffix zero or prefix /a-/ or /i-/ *third person* (43), suffix /-c/ *predicative* (1271), suffix /-he·/ *causative* (1021), and suffix zero or /-h/ *imperative* (1282).

Examples of themes containing I are listed in the following paragraphs.

[cá:kI] which appears in cá:kic *he's wailing* (43 + T + 1271) and cá:k *wail!* (T + 1282).

[árakitI-] which appears in árakitic *it's on fire* (43 + T + 1271) and árakithe·c *he sets it on fire* (43 + T + 1021 + 43 + 1271).

[kipá·takI-] in kipá·takic *it's closed* (43 + T + 1271) and kipá·tak *close it!* (43 + T + 1282).

[tá·rI-] in tá·ric *he crosses* (43 + 43 + T + 1271) and tá·t *cross!* (43 + T + 1282). (The change of /r/ to /t/ is discussed in **1.2.**)

[kí·rI-] in kí·ric *he looks* (43 + 43 + T + 1271) and kí·t *look!* (43 + T + 1282).

[kírukI-] in kírukic *he packs it* (43 + 43 + T + 1271) and kíruk *pack it!* (43 + T + 1282).

[púšI-] in púšic *it's closed* (43 + T + 1271) and púš *close it!* (43 + T + 1282).

[kúxtI-] in kúxtic *he helps him* (43 + 43 + T + 1271) and kúxt *help him* (43 + T + 1282).

[rá·ruwI-] in rá·ruwic *he's still going along* (43 + T + 1271) and [rá·ruph] *go along!* (T + 1282). (The change of /w/ to /p/ is discussed in **1.2.**)

[kú·cI-] in kú·cic *he takes it* (43 + 43 + T + 1271) and kú·c *take it!* (43 + T + 1282).

[kíruwI-] in kíruwic *he counts it* (43 + 43 + T + 1271) and kíruph *count it!* (43 + T + 1282).

[kiká·kI-] in wa·kiká·kic *she sews something* (11 + 43 + T + 1271) and wa·kiká·kh *sew something!* (11 + T + 1282).

[kíwiriki·rI-] in kíwiriki·ric *he comes in his own* (43 + T + 1271) and kíwiriki·the·c *he let him come in* (43 + T + 1021 + 43 + 1271).

[ká·rI-] in ká·ric *he asks him for it* (43 + 43 + T + 1271) and ká·t *ask him for it!* (43 + T + 1282).

[cíxI-] in cíxic *he jumps* (43 + T + 1271) and cíx *jump!* (T + 1282).

[há·cI-] in há·cic *it drops off* (43 + T + 1271) and há·chiwa·c *I drop them off* (43 + T + 1021 + 41 + 1271).

[kátI-] in kátic *it's true, he's sure* (43 + T + 1271) and aré·kathe·c *it's too hot, it made itself very hot* (43 + T + T + 1021 + 43 + 1271).

[xápI-] in xápic *he lies down* (43 + T + 1271) and xáp *lie down!* (T + 1282).

[awaxá·tI-] in awaxá·tic *it's lit, it's light* (43 + T + 1271) and awaxá·the·c *he lights it, he makes it light* (43 + T + 1021 + 43 + 1271).

[xá·pI-] in xá·pic *he's thin* (43 + T + 1271) and xá·phe·c *he makes it thin* (43 + T + 1021 + 43 + 1271).

[a . . . wá·kI-] in awá·kic *he sits down* (43 + T + 1271) and awá·k *sit down!* (T + 1282).

[ákI-] in ákic *he joined* (43 + T + 1271) and ri·ák *join!* (42 + T + 1282).

[ríkI-] in ríkic *he hits it* (43 + 43 + T + 1271) and rík *hit it!* (43 + T + 1282).

[íruxiŠI-] in íruxišic *it's soaked* (43 + T + 1271) and íruxiche·c *he soaked it* (43 + T + 1021 + 43 + 1271).

[híši-] in híšic *it's red* (43 + T + 1271) and híšhe·c *he reddens it* (43 + T + 1021 + 43 + 1271).

[í·thipI-] in í·thipic *he is under* (43 + T + 1271) and í·thiphe·c *he puts it under* (43 + T + 1021 + 43 + 1271).

[ó:tI-] in ó:tic *it's ripe, it's cooked* (43 + T + 1271) and ó:the·c *she cooked it* (43 + T + 1021 + 43 + 1271).

[hiráwI-, há·wI-] in hiráwic *he sleeps*

(43 + T + 1271), and hiráphe·c *he made him sleep* (43 + T + 1021 + 43 + 1271), and riháwic *you sleep* (42 + T + 1271) and riháp *sleep!* (42 + T + 1282).

[atÍ-] in ati *house* (T) and athé·rahta *between the houses, in the village* (T + T + 1011).

[karáwI-] in karáwic *he remembers* (43 + T + 1271) and karáp *remember* (T + 1282).

Forms containing A are listed in the following paragraphs.

[í·thipA-] in í·thipac *it's covered* (43 + T + 1271) and í·thiphe·c *he covered it* (43 + T + 1021 + 43 + 1271).

[cúhkA-] in cúhkac *it's flat* (43 + T + 1271) and cúkhe·c *he flattens it* (43 + T + 1021 + 43 + 1271). (The change of /hk/ to /k/ is discussed in **1.2.**)

[ruwácA-] in ruwáca *one* (T) and ruwáche·c *he made it one* (43 + T + 1021 + 43 + 1271).

[hí·tA-] in hí·tac *he's fast* (43 + T + 1271) and hí·the·c *he makes it fast* (43 + T + 1021 + 43 + 1271).

[xátatakA-] in xátatakac *he's quick* (43 + T + 1271) and xátatakhe·c *he makes it quick* (43 + T + 1021 + 43 + 1271).

The /a/ of stem final clusters /ua/ or /ia/ is morphophonemically A. Thus, [išíA-] in isíac *it's bad* (43 + T + 1271) and in išíhe·c *he makes it bad* (43 + T + 1021 + 43 + 1271); and [cikúA-] in cikúac *it's sweet* (43 + T + 1271) and in cikúhe·c *he sweetens it* (43 + T + 1021 + 43 + 1271).

Capital E· has the underlying phonemic shape /ia/ when it precedes morpheme initial /a/; elsewhere it is /e·/. Thus, the stem written morphonemically as šÊ·- appears as /šé·-/ in šé·c *he says* and as underlying /šía-/ in ší·ʔac *they say*; the stem phÊ·- appears as /phé·-/ in phé·c *he ate it up* and as underlying /phía-/ in phí·ʔac *they ate it up*. (The change of /ia/ to /i·/ before morpheme initial /a/ is discussed in **1.2.**)

Parentheses are also used as morphophonemic symbols; they are placed around first vowels in stems[3] of the type CVCV or CVCVV[4] which are absent when the stem occurs with a phonemically constituted prefix—i.e. any prefix other than zero—and are phonemically actualized when the stem occurs without a prefix or with a zero prefix. Thus the stem which appears in hu·pá *shoe* (stem with no prefix) and matahpá *my shoe* (prefix 41 + prefix 51 + stem) is written morphophonemically h(u·)pá. The stem which appears in kahé·c *he gives it away* (43 as zero + 43 as zero + stem + 1271) and wa·khé·c *I give it away* (43 as zero + 41 + stem + 1271) is written morphophonemically k(a)hé·-. The stem written morphophonemically š(i)kíA- appears with a zero prefix in šikíac *it's curly* (43 + stem + 1271) and with the prefix pa- (134) in paškíac *it's kinky* (43 + 134 + stem + 1271). The stem with morphophonemic shape x(a)té·- appears with a zero prefix in xaté·c *he wins* (43 + stem + 1271) and with the prefix wa- (41) in waxté·c *I win* (41 + stem + 1271).

1.2. The variations treated above are explicated with symbols including capitals and parentheses. Other variations are now given in terms of general rules. The morpheme variations immediately following are dependent upon phonemic environment; they occur in all morphemes except those written with special morphophonemic symbols. Each set of examples below is preceded by a formula; the symbols used in these formulae are those used in phonemic writing, plus V for *vowel* and WV for *weak vowel*, defined in **1.1.**

[hk, hc + h > kh, ch]: clusters of /hk/ or /hc/ are replaced by the stop member of the cluster when followed by morpheme initial /h/. Morphophonemic šáhkI- appears before /-c/ (1271) in šáhkic *it's open* and before /-he·c/ (1021 + 43 + 1271) in

[3] The distinction between stems and themes is discussed in **3,** to be published.

[4] C = consonant, V = vowel in this and other formulae given in this chapter.

šákhe·c *he opened it.* Morphophonemic cawúhcI- appears before /-c/ (1271) in cawúhcic *it's straight* and before /-he·c/ (1021 + 43 + 1271) in cawúche·c *he straightened it.*

[wWV > p; rWV > t]: /w/ and /r/ followed by weak vowels (I and A) in the environments in which the vowels are absent (see **1.1.**) are replaced, respectively, by /p/ and /t/. Thus, morphophonemic [karáwI-] appears before /-c/ (1271) as karáwic *he remembers* and before the zero alternant of the imperative singular (1282) as karáp *remember!* Morphophonemic [tá·rI-] appears before /-c/ in tá·ric *he crosses* and before zero in tá·t *cross!*

[V + a, o > a, o; V· + a > a·; V_1V_2 + a > V_1·; V_1? V_1 + a > a?a]: before any morpheme initial /a/ all final vowels except /u/ and /u·/ are assimilated to /a/ and vowels immediately preceding final vowels (i.e. the first members of clusters of non-identical vowels) are lengthened. Identical vowels separated by glottal stop both become /a/. The morpheme initial /a/ is then absent. Before the -o?o alternant of suffix 1201 (*plural*) vowels are assimilated to /o/ in the same manner as to /a/ above. In the examples given below forms without suffixes beginning in /a/ or -o?o are listed first; to these are added the suffix -a?a- ~ -o?o *plural* (1201). Three sets of examples:

[V + a, o > a, o]: cáckic *he's noisy*, cácka?ac *they're noisy*; í·xpa *his wing*, í·xpo?o *his wings, their wings*; kárachec *he believes*, káracha?ac *they believe*; iré?ec *he talks*, irá?a?ac *they talk.*

[V· + a > a·]: hopí·c *it's a hole*, hopá·?ac *they're holes*; araxáwa·c *I set it on fire*, araxáwa·?ac *we set it on fire*; šákhe·c *he opened it*, šákha·?ac *they opened it.*

[V_1V_2 + a > V_1·]: tiríac *he runs*, tirí·?ac *they run*; wúa *fish*, wú·aš *fish* (*plural, named*).

[V- + -V > V?V]: a glottal stop appears between morpheme final vowels and morpheme initial vowels. Thus, the sequence of prefix 21, wa·-, plus prefix 11, i·-, plus the stem í·he is phonemically wa·?i·?í·he *paint.* An overiding rule for fast speech is given below in **1.3.**

1.3. Speed of speech has an effect analogous to phonemic environment in the five variations listed below. Each set of examples is preceded by a descriptive formula.

[-V· ~ -V]: morpheme final long vowels when followed by juncture become short vowels in fast speech; but in slow speech these long vowels vary freely with short vowels. Thus, whether fast or slow speech, hopí· ends in a long vowel before a consonant: hopí·c *it's a hole*; but hopí *hole* (fast speech), and hopí· ~ hopí *hole* (slow speech).

[VrV ~ V?V]: intervocalic /r/ may be replaced by glottal stop in fast speech. Thus, wíripuxhi *beer* in slow speech, and wíripuxhi ~ wí?ipuxhi *beer* in fast speech.

[V?V ~ V·]: intervocalic glottal stop may be absent in fast speech. Thus, wíripuxhi ~ wí?ipuxhi ~ wí·puxhi *beer* in fast speech and only the first of these forms occurs in slow speech.

[V_1rV_2r ~ V_3·r]: where /r/ appears in slow speech between non-identical vowels vowels followed by /r/, fast speech shows a long vowel of a quality different than either of the non-identical pair. Only one sequence of this kind appears in our sample, namely, /aru/ in slow speech, which appears in fast speech as /o·/: arurá·c (slow), o·rá·c (fast) *you'll drink.*

[V ~ V·; V· ~ V:]: in very slow speech, which may also be called 'mother language'[5] a mora of length may be added to any non-final vowel (i.e. short vowels may be long, long vowels may be overlong). Thus, withé *cow* in fast or slow speech, but wi·thé *cow* in very slow speech; and awá·thi *river* in fast or slow speech but awá:thi *river* in very slow speech.

[V: ~ V·]: one phonemic length in Hidatsa

[5] C. F. Voegelin and Florence M. Robinett, 'Mother Language' in Hidatsa, IJAL 20.65–70 (1954).

is restricted to very few morphemes in all styles of speech except that of very slow speech; this is the three mora length. All morphemes showing this in fast or slow speech appear in two alternants, one with three mora vowel (marked by colon, :), the other with two mora vowel (marked by raised dot, ·). The variation between these alternants is free; the alternant with two mora vowel is more frequent when the syllable in which it occurs is followed by a short vowel in checked position. All the themes in our sample in which this variation occurs are listed here: wá:ra ~ wá·ra *winter*, é:ca ~ é·ca *all*, á:ši ~ á·ši *horn*, á:pa ~ á·pa *his neck*, cá:ki- ~ cá·ki- *mourn*, nó:kte ~ nó·kte *corpse*, icú:wuška ~ icú·wuška *horse*, cú:wa ~ cú·wa *seed*, ó:kci ~ ó·kci *night*, cú:ta ~ cú·ta *half*, ó:ti- ~ ó·ti *ripe, cooked*, í:thipi- ~ í·thipi *fall and cover*, ú:waca ~ ú·waca *money*, cá:- ~ cá· *dull (in color)*.

1.4. Morpheme alternants of affixes are discussed in **2.**; those alternants of themes whose occurrence is associated with particular affixes are discussed here. (See **3.1** for the definition of themes.)

Two main types of theme variations occur —a two-alternant type and a three-alternant type. Each of these main types appears in sub-types depending upon associations with particular affixes.

Sub-types of the two-alternant type are now listed together with examples for each sub-type.[6]

[6] Both for examples of the two-alternant type and for examples of the three alternant type, below, the non-first or non-second person form or the singular form is given first (i.e. as alternant .1) since the privileges of occurrence of such forms are greater. Word examples are given in parentheses after each theme example. An index number will be assigned to each theme as it is listed in the dictionary; for purposes of reference, the numbers here assigned as index numbers are those assigned in the sample on the basis of their relative order on the tape.

Sub-type I. Here, a particular alternant appears when preceded by either prefix 41 or 42 marking first or second person actor, another alternant appears in all other environments. 155.1 ka·rĺ-, 155.2 -ká·- *ask for* (ka·ríc *he asks for it*, wa·ká·c *I ask for it*); 218.1 kí?i-, 218.2 -kí- *pack* (kí?ic *he packs it*, wa·kíc *I pack it*); 194.1 he·-, 194.2 -á- *say* (hé·c *he says*, wá·c *I say*); 304.1 hiráwI-, 304.2 -háwI- *sleep* (hiráwic *he sleeps*, wiháwic *I sleep*); 285.1 híri-, 285.2 -hé- *make, do* (híric *he makes it*, wahé·c *I make it*).

322.1 atá·ri-, 322.2 a . . . tará·ri- *come out* (atá·ric *he comes out*, awatará·ric *I come out*). (The significance of the three dots in the second alternant is discussed in **3.**)

411.1 opxía-, 411.2 a . . . opxía- *stuff hole* (oxpíac *he stuffs a hole*, awopxíac *I stuff a hole*); 400.1 ó·pahti-, 400.2 a . . . ó·pahti- *cork* (ó·pahtic *he corks it*, awó·pahtic *I cork it*); 388.1 iské·-, 388.2 a . . . ské·- *think, worry* (iské·c *he worries*, awaské·c *I worry*); 391.1 ihkíriki-, 391.2 a . . . hkíriki- *throw* (ihkírikic *he throws it*, awahkírikic *I throw it*); 392.1 i·kúhpa·-, 392.2 a . . . kúhpa·- *hate* (i·kúhpa·c *he hates him*, awa·kúhpa·c *I hate him*); 394.1 ihpúa-, 394.2 a . . . hpúa- *throw* (ihpúac *he throws it*, awahpúac *I throw it*); 395.1 okháta·-, 395.2 a . . . okháta·- *dress up* (okháta·c *he dresses*, awokháta·c *I dress up*); 398.1 ošé·-, 398.2 a . . . ošé·- *put in* (ošé·c *he put it in*, awošé·c *I put it in*); 399.1 ó·cahti-, 399.2 a . . . ó·cahti- *bury* (ó·cahtic *he buried it*, awó·cahtic *I buried it*); 410.1 úa-, 410.2 a . . . úa- *make a fire* (úac *he makes a fire*, awúac *I make a fire*).

174.1 kacá·-, 174.2 -kcá·- *blow at* (kacá·c *he blows at him*, wakcá·c *I blow at him*). Unlike 'parenthetic' vowels (**1.1.**), the first vowel of alternant .1 is not absent when kacá·- is preceded by goal prefixes, as wi·kacá·c *he blows at me*.

In sub-type II, a particular alternant appears only when preceded by prefix 41 marking first person actor; another alter-

nant appears in other environments. The only example of this sub-type in our sample is: 113.1 rú·ti-, 113.2 -ú·ti- *eat* (rú·tic *he eats*, rarú·tic *you eat*, wú·tic *I eat*).

In sub-type III, a particular alternant appears only when preceded by prefix 42—second person actor; another alternant appears in other environments. The single example of this sub-type in our sample is: 137.1 khú-, 137.2 rakhú- *come back* (khúc *he comes back*, wa·khúc *I come back*, rarakhúc *you come back*).

In sub-type IV, a particular alternant appears not only when preceded by prefix 41, first person actor, but also in all other sequences except those including prefix 42, second person actor, or prefix 43, third person actor, plus suffix 1201.1, plural. Conversely, the other alternant appears when preceded by prefix 42, second person actor, or followed by suffix 1201.1, plural, when not preceded by prefix 41, first person actor. 204.1 kí·-, 204.2 rakí·- *be home, be back* (wakí·c *I'm back*, kí·c *he's back*, rarakí·c *you're back*, raká·ʔac *they're back*). 292.1 hú-, 292.2 rahú- *come* (húc *he comes*, wa·húc *I come*, rarahúc *you come*, rahúaʔac *they come*).

In sub-type V, a particular alternant appears preceding suffix 1201.1 marking plural; another alternant occurs in other environments. One example of this sub-type appears in our sample: 71.1 rahkú-, 71.2 -hkú- *go along, still* (wa·rahkúc *I'm going along*, wahkúaʔac *we're going along*).

Sub-type VI. Here the variation between the alternants is free. Only one example of this sub-type appears in our sample: 100. karáwi- ~ karáwI- (karáwihe·c ~ karáphe·c *he makes him remember*).

Next, sub-types of the three-alternant type are listed, together with examples of each sub-type.

In sub-type I, a particular alternant appears before suffix 1201.1—plural, in sequences which do not include prefixes 41 or 42; another alternant appears after prefixes 41 or 42 marking first or second person actor in sequences which include suffix 1201.1; still another alternant occurs in all other environments. 111.1 áruwI-, 111.2 underlying raría- 111.3 underlying -ría- *be still going along* (áruwic *he's still going along*, wá·ruwic *I'm still going along*, rarí·ʔac *they're still going along*, warí·ʔac *we're still going along*).

In sub-type II, a particular alternant appears after prefix 41 or 42, first or second person actor; another alternant appears before suffix 1201.1 when not preceded by prefixes 41 and 42; still another alternant occurs in all other environments: 102.1 hí·-, 102.2 -á-, 102.3 under-lying hía- *drink* (hí·c *he drinks*, wá·c *I drink*, wá·ʔac *we drink*, hí·ʔac *they drink*).

In sub-type III, a particular alternant appears after prefix 41 or 42 marking first or second person actor; another alternant occurs in all other environments; still another alternant varies freely with the second in sequences which include the causative suffix 1021: 442.1 té·-, 442.2 -tí-, 442.3 tá- *die* (té·c *he dies*, watíc *I die*, té·he·c ~ táhe·c *he kills him*).

In sub-type IV, a particular alternant appears after prefix 43 plus prefix 43 marking third person goal and third person actor; another alternant appears after prefix 41 marking first person goal when followed by suffix 1282 marking imperative singular; still another alternant occurs in all other environments: 79.1 kú-, 79.2 -úk, 79.3 kúʔu- *give* (wakúc *I give him*, wikúc *he gives me*, múk *give me!* kuʔuc *he gives him*).

In sub-type V, a particular alternant appears in sequences which do not include suffix 1201.1, plural; another alternant appears in sequences which include prefix 41, first person actor, and suffix 1201.1; still another alternant occurs in all other environments: 27.1 ré·-, 27.2 -há-, 27.3 rahá- *go* (ré·c *he goes*, wa·ré·c *I go*, wa·háʔac *we go*, raháʔac *they go*, raraháʔac *you (plural) go*).

COMANCHE LINGUISTIC ACCULTURATION III

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5. Some other effects of acculturation on Comanche language and speech
5.1. Comanche bilingualism
6. On Comanche personal names
7. Theoretical conclusions

5. At the same time that Comanche has added new vocabulary, old words have been sloughed off or have become obsolescent.[133] Even when the word remains, as is the case with many meaning extensions, knowledge of the original referent is often lost. Just as the average American today has little acquaintance with terms for the parts of a horse's harness, types of horse-drawn vehicles, or sailing ships and their rigging, the Comanche lost a wealth of terms for such things as basketry types, various weaves[134] and implements such as the metate and mano, and fishtraps when they entered the Plains. Similarly, words for traits of Plains culture lost or displaced in the transition to Western culture are rapidly disappearing from the language, as is the full and colorful vocabulary of plant and animal names of a people who for centuries had lived by hunting and food-gathering. However, owing to both the conservatism of language and the memories of men, old traits, customs and beliefs are often fossilized in words and may be recovered by means of a little linguistic archaeology. The following is a representative list of half-forgotten words:

ʔe·nA *jerk meat*(!); ʔohahpíya·ʔ *wasp* (*yellow carried behind*); ʔohanaʔsupé·ʔ *wild gourd* (*yellow ball*) [A gourd was formerly used in various ball games.]; ʔïtanucI *tipi pegs*; paya·pE *an edible tuber*; puhanahmsuapĭ *costume for Sun Dance* (*medicine clothes*); puhkuhciʔ *contrary one* (The Comanche shared the general Plains trait of institutionalized contrary behavior); taʔsiwó·ʔ *buffalo* (*feet dragging*) [Used more commonly for buffalo by older Comanche than kuhcU or nïmïkuhcU]; taté?cI[135] *spider* (*our brother-in-law*); pïhïre?cI *tarantula* (*hairy brother-in-law* [*spider*]); tamakwasuʔ *buckskin dress decorated with elk teeth* (*tooth dress*); tïvahpI *pinon nuts*; tïkehkwaʔI *a hunting party out to secure an immediate supply of meat*; kwahinacuʔU *plover* (*back medicine*); kwiʔnai *eagle* (Said to be an older word for eagle than piahuhcuʔ, *big bird*); cihavïhkaʔI *to be menstruating* (*to become starved*) [Women were supposed to fast while menstruating]; cuhnikorohkO *bone breastplate*; soʔmeʔ *tanned buffalo hide*; haivï·yĭ *helldiver* (probably haic *friend* + pï·yï *duck*. Said to be a sacred bird and a common guardian spirit); hiʔo·wïhturuʔA *windbreak of dead sunflower stalks*;[136] huhkU *collarbone, flute made of a collarbone*; mï· *custom of giving away surplus food*; narohpaʔ *medicine given one by a supernatural* (na-, reflexive tohpa *dig out* + -ʔ, nominalizer); nacóhkweʔ *mesquite* (see cohkwe *to pound*; mesquite beans were pounded into a mush and eaten); namavicó·ʔniʔ *mesquite* (*to*

[133] D. D. Lee, The Linguistic Aspects of Wintu·' Acculturation, AA 45: 435–440, pp. 438–40 (1943), discusses this point.

[134] See Julian H. Steward, Culture Element Distributions: XIII, Nevada Shoshone, Anthropological Records, 4: 2, pp. 239 and 241, (1941).

[135] This and the following word must be understood with reference to the reciprocal joking relationship between Comanche brothers-in-law. Thomas Gladwin, Comanche Kin Behavior, AA 50: 73–94, p. 87 (1948), gives *our testicles* and *our smell of dog's urine* as common phases substituted for this relationship term.

[136] Windbreaks are a Shoshone trait, Julian H. Steward, Culture Element Distributions: XXIII, Northern and Gosiute Shoshone, Anthropological Records 8: 3, p. 272 (University of California, 1943).

squeeze juice out; a soup was made of juice from mesquite pods); naninasu?aitɪ̈ *taboo against mentioning the name of a dead person*; nïepI *tornado, a mythical big red bat*; wï·yu? *awl*; wo?anacu?U *ragweed* (*back-bone medicine*) woinU *flute* (Applied now to the modern flute); yu?ane·? *bull-roarer* (Used by medicine-men and in peyote ceremonies).

Especially noteworthy in Comanche is a well-defined pattern of synonymous animal terms which figure prominently in stories, myths and songs. Their abundance in the language indicates a knowledge of and interest in animal life which may in part be a relic of an earlier Shoshonean cultural tradition. Also, animal names were frequently used in Comanche personal names and the strong taboo on using words associated with a dead person's name may have resulted in the creation of new metonymical terms which then became established in the language. These synonymous animal names are frequently descriptive or they may reflect a folk belief or attitude toward the animal in question. A list of these various terms for a number of familiar animals follows:

Bear: parua?; wasape?; wïra?;[137] ?ohamukwe?ya·hr *something yellow* [*feces*] *smeared on his nose*; piaráhpanakatɪ̈ *has big soles*; pïhïsoyo? *hair hanging down*; tu·piarai? *black big anus.*

Coyote: ce·na?; ?isA *false, deceitful*; ?oha?ahnakatɪ̈ *has yellow armpits*; kawosA (The meaning of this word was given by one informant as something like *has a bag of tricks*); kïhwria? *drooler*; narïmiwahtɪ̈ *has no owner* (as compared with a dog).

Cottontail Rabbit: ?eka?e?re·? *red nape*; tïehtavu?kina? *little rabbit* (*jackrabbit*); hu·tavu?kina? *wood rabbit*; na?nohka? *can be baked*; yu?naivïhï? *soft hair.*

Opossum: pa?sïnó?a? *pregnant outside*; pacikwasi? *bare tail*; pïwíya?ïno·hr *carries his own rope* (The opossum is reputed to choke chickens and turkeys to death with his tail).

Raccoon: parú·kU *water animal* (?); tu?pa?wehni? *black hanging down* (*from the cheeks*); cuhniwï?A *bone penis.*

Mourning Dove: ?eka?omo? *red legs*; pasahó·? (Possibly related to pasapɪ̈ *dried up*. One informant suggested the word referred to the dove's habitat, i.e., dry creek beds and river bottoms where there was standing timber and driftwood); ku?ewó·?; na?yanimaitɪ̈ *lazy one* (Because the mourning dove builds a loose nest and lays only one egg).

While the dog was of paramount importance to the Comanche, only one synonym, wo?woki? *barker*, in addition to the usual word for *dog*, sari·?, was found. It may be noted, however, that dogs were individually and fondly named.

It is interesting to observe that a number of newly introduced animals, including the chicken, have similarly received several names.

Pig: po?ro? (from Spanish, *puerco*); ho·kI (from English, *hog*); *muvipo?ro? (*nose* + po?ro?); munua? *nose mover.*

Mule: mu·ra? (from Spanish, *mula*); to?moci? (from to?mocI *sharp-pointed hoof*); mï·warï?ipɪ̈ (This word was explained by one informant as meaning, "when you get to a point where you can't do anything more with a thing", and referring to the mule's sterility.)

Elephant: ?esi?ïnï·? *grey animal*; mu?kwipuna? *nose curled up*; mú·pichatïnó·wapI *carries things for mupic*[138] (a legendary giant).

Chicken: ko·ko?; ko·korá?a·?; ta·ya?ke? *dawn crier* (*rooster*); ?ona?ai? *use salt* (A chicken's pecking is likened to shaking salt).

5.1. Comanche bilingualism.

The whole range of bilingualism is to be

[137] The first three unanalyzable words may originally have referred to different species. See Julian H. Steward, Basin-Plateau Aboriginal Sociopolitical Groups, BAE-B 120, pp. 274–83 (1938).

[138] Charles Detrich, Comanche Vocabulary Collected at Fort Sill, Oklahoma, manuscript on file at BAE (1895) gives only mupic for elephant.

found among the 2400 or so Comanche, and there is a complete inversion as one descends through the generations as to which is other and which mother tongue. Most old people over 60 speak little or no English, while most young people under 30 speak little or no Comanche. Grandchild and grandparent, as among immigrant groups in this country, often have real difficulty in communicating and the breach between generations who know different ways of life is thereby widened. Although most Comanche between the ages of 30 and 60 are bilingual, the number who are equally fluent in both English and Comanche is relatively small. They are mainly men and a few women between the ages of 40 and 55; the generation that stands midway between the old culture and the new. A few Comanche descendants of Mexican captives speak Spanish in addition to English and Comanche.

The degree of fluency in English of any individual Comanche provides what is probably a fairly reliable index of his relative acculturation to American culture patterns. This is perhaps best measured, not by some formalized test of his knowledge of English, but rather by observing his choice of language and his command of it in various speech situations ranging from the intimacy of a family or other primary group, on the one hand, to casual associations in religious, economic or administrative contexts on the other.[139a] Or the problem might be reversed and the Comanche spoken by younger individuals in various social contexts could be observed. Such observations when correlated with variables of personality and status would be of considerable interest and value to students of the psychological and sociological aspects of acculturation. It may be noted that in speaking among themselves our interpreters used both English and Comanche, although, significantly, in lighter moods they seemed to prefer Comanche.

The English spoken by the Comanche is, of course, patterned after the local Oklahoma American dialect and ranges from an acceptable standard English to the scant pidgin of an elder trading at a village store. The English vocabulary of one informant[139b] was seasoned with such expressions as "heap", "no savvy" and "me catchem". But for "ugh!" his English vocabulary fitted perfectly the stock comic strip version of an Indian's broken English. English has as yet no literary tradition among its Comanche speakers and the participation of most Comanche in American culture is at best little more than marginal. One is forcibly struck by the contrast between the colorful and subtle Comanche as spoken by the elders or as it is retained in traditional literature and songs[140] and the meager English of the young.

Comanche habits of speech can often be detected in the English of bilinguals, particularly those who learned English as a second language. These habits were especially intrusive in the pronunciation of English words, though apparent as well in word order, in the choice of words and their use in a Comanche-like sense. Thus, one interpreter, T, pronounced marrow as ma·. J pronounced jello, jero·, and could make no distinction in enunciating meal and mule. In many instances it would, however, be

[139a] See Feliks Gross, Language and Value Changes among the Arapaho, IJAL 17.10–17 (1951); George Barker, Social Functions of Language in a Mexican-American Community, Acta Americana 5.185–202 (1947); and especially Uriel Weinreich, Languages in Contact: Findings and Problems (New York, 1953); Einar Haugen's definitive two volume study, The Norwegian Language in America (Philadelphia, 1953).

[139b] This individual, a gap-toothed and bowlegged old man of seventy odd, was a buffoon by temperament. He had been a jockey and a tolerated hanger-on among White ne'er-do-wells who were his probably amused mentors in the English language.

[140] See D. B. Shimkin, Shoshone I: Linguistic Sketch and Text, IJAL 15: 175–188 (1947); and David McAllester, Peyote Music, VFPA No. 13 (New York, 1950).

difficult to discover whether deviations from customary English usage were due to the influence of Comanche or simply to a faulty knowledge of English.

Similarly, the Comanche of younger people for whom English is a first language has undergone a great deal of simplification. It rather than English is the foreign tongue. The final glottal stop, whispered vowel or aspiration is often pruned off, and affixes, which carry the burden of nice semantic distinctions, are used carelessly or, in some cases, entirely omitted. Modern words which are often descriptive are frequently substituted for old ones and many more English words creep into the Comanche of the younger persons. English expressions are often uncomfortably clothed in Comanche phrases. All this is deplored by the elders who frequently complained about the impoverishment and contamination of their native tongue. One younger interpreter who was less adept in Comanche than English was constantly corrected by an older man who was something of a stickler for good Comanche usage.

The bilingual speaker in his role of interpreter is an important language creator. Sermons in the Indian churches are for the most part preached in English by a White minister and translated extemporaneously by the native deacon or lay brother a few sentences at a time. The performance of this function by J was especially skillful. Beyond what official questioning of older Indians occurs, there is little other formal interpreting, yet on countless informal occasions these bilinguals act as linguistic go-betweens, mediators of the old culture and the new. Finally, it may be remarked that our interpreters displayed a great deal of interest in comparing their translations and discussing finer points of meaning.

English has had another rather different influence on Comanche. Many of the younger Comanche feel that the speech of the older people is vulgar, an attitude that reflects the adoption by the Comanche of a White sense of propriety and prudishness, and there has been a direct extension of English word taboos to the native speech which is unashamed and forthright. However, one interpreter who was a devout Christian was an exception. He had little hesitation in supplying or using a sexual vocabulary in Comanche yet was extremely embarrassed at uttering the vulgar English equivalents.

A new euphemistic descriptive word for *feces* or *urine*, na?ro?ipï (na-, reflexive + to?i *come out*, + -pï, nominalizer), which can be translated as *waste matter*, has been substituted for the old word for *feces*, kwitapï, both in compounds such as the words for toilet-paper, toilet or chamber pot and also when it occurs alone. One of the older men laughed when asked about the word, but granted its position in the language. A milder word for *cheese*, kïhtavicipï, *hard milk*, or the English loanword, ci·s, is usually heard in place of ko?avicipï *groin milk*, or ko?akwana? *groin smell*. Similarly, the coarse or obscene meanings of many Comanche personal names are frequently disguised by slight alterations in form. A comparable effect has been noted in Muskogee: "Certain Muskogee words are avoided when white people are around because they contain syllables that might be mistaken for some of the English "four-letter" words".[141] To the writer's knowledge the same thing is not found in Comanche, probably because the phonetics of the language aren't quite as likely to give rise to such interpretations.

Finally, we may ask why no pidgin or creolized version of Spanish or English arose among the Comanche or, in fact, among other North American Indian tribes, since these marginal languages are so prevalent in other parts of the world.[142] The answer, albeit briefly and inadequately

[141] Mary R. Haas, personal communication.

[142] See John E. Reinecke, Marginal Languages —A Sociological Study of the Creole Languages and Trade Jargons. Ph.D. dissertation (Yale University, New Haven; 1937).

stated, is probably that the conditions under which these forms of speech flourish were absent. A relatively stabilized tangential relationship between a dominant and subordinate people as between master and slave or servant, missionary and convert, or trader and native seems necessary for the formation of a pidgin or creolized language. Such a relationship never held between the Comanche and Whites for any length of time and no true pidgin ever developed.

Comanche is a dying language. It is being steadily eclipsed by English which today has a new and relentless prestige. Another 50 to 75 years may see Comanche cease to function as a living language. The constant contact with Whites, the teaching of English in the schools and, due to the fact that the Comanche live on scattered allotments, the lack of an integrated community or tribal life comparable to that of the Pueblo or Reservation tribes, are all factors in the evanescence of the language. English is the language of the dominant culture, the language through which one gets on in the world by means of widening social, economic and political contacts. Though it is doomed, the language is far and away the most vitally functioning part that remains of the old Comanche culture. Other traits are gone, empty and broken forms, or compromises with the new. Comanche today affords ample evidence of the flexibility and tenacity of language in the face of pressure from a dominant culture.

6.0. Personal names, along with kinship terminology,[143] represent a segment of culture where custom and language are virtually inseparable, and it seems especially appropriate in a study of linguistic acculturation to describe the effects of contacts with Western culture on Comanche personal names. To provide a basis for comparison between the old and new practices, a brief ethnographic account of the old naming customs will first be given.

6.1. Comanche personal names were bestowed in a variety of ways and frequently in rather casual fashion. In rather sharp contrast to our practice, a person could in his lifetime successively bear several different names, or be known by several different sobriquets at any one given time. Little distinction was made between male and female names, although some plainly did refer to male or female characteristics. Women's names, however, tended to be more permanent.

While almost from birth an infant could be called by a pet name or nickname which was often kept until adolescence, a child could also simply be called by the word for *boy*, pihia?, or *girl*, nai?A. It was not uncommon for a person to be called by a status term designating age and sex, or by a kinship term, in lieu of his personal name. However, a youngster would usually receive a given name in early childhood, although one informant stated that he was not given such a name until he was ten years old. A child's parents in modest ceremony would customarily call in an elder or two to relate stories and choose as a name some word descriptive of an incident or character in the tale. A name could also come from some incident in a person's life which subsequently came to be associated with him.

In some instances a child was named after a parent, relative or other person, but because of the taboo against using the name of a dead person, only if he or she was still alive. Or, alternatively, a boy could, in familiar European fashion, be called "son of so and so". Only in the latter case was there anything comparable to the use of paternal surnames.

Nicknames derived from physical peculiarities or temperamental idiosyncrasies were frequently bestowed and could be given at almost any point in the life cycle from babyhood on. In line with the insti-

[143] Thomas Gladwin, Comanche Kin Behavior, AA 50: 73–94 (1948) discusses Comanche kinship terms.

tutionalized joking relationship, such nicknames were usually given by an in-law, and more frequently than not were derogatory or had some sexual or obscene reference.

A young man would often receive a new name after he had proven himself on his first war party. Or, a young warrior, who aspired to the name of an old man who had been a famous warrior, could ask permission of the oldster to become his namesake. The old man might then put the youth to the test of equalling a feat well remembered by the people. If the youth met the test, the old man would be compelled to give up his illustrious name and use a former one.

In earlier times names along with other gifts were bestowed through visitations by supernatural spirits who were sought out by fasting and dreaming in secluded places. This practice, however, seems to have been in eclipse as early as 1870, although many older Comanche still bear names given them by their guardian spirits. Thus, Comanche names may be characterized as varied and highly individual, a fact which reflects Comanche emphasis on the worth and variety of the individual personality.

6.2. By a study of the 2394 Comanche names on the January 1940 census rolls one may trace, from the older through the younger generations, the adoption of the White system of patronymics and the consequent displacement of the native naming patterns described above. This shift was accomplished largely within the past seventy-odd years dating from the early reservation period. Rollcalls, the taking of vital statistics and census data, intermarriage with Whites, rationing, attendance at schools and churches, orthodox baptisms, trading, and the casual bestowal of personal names by the Whites were all factors instrumental in the change.

Although the rolls were called every three days, the men by name and the women and children by count, as early as 1875, the first formal census was taken in 1890 and names of Indians "had to be definitely decided upon and so listed. . . . each Indian was required to give the name he preferred and he was encouraged to keep it".[144] "Grass money", which was collected from White stockmen for grazing privileges on reservation land, was paid twice a year to each family according to the number of its members. This entailed a complete census each time and much struggling by officials with difficult Indian names was reported.

In an effort to systematize Indian names for the purpose of facilitating land allotments, etc., the Office of Indian Affairs issued a circular dated December 1, 1902, setting forth a number of rules governing the recording of Indian names on agency roles and their use in documents and for other official purposes: (1) The father's name should be the family surname; (2) The Indian name, unless too long and clumsy, should be preferred to a translation; (3) A clumsy name could be arbitrarily shortened by one familiar with the language, provided its identity was not lost; (4) If the use of a translation seemed necessary, or if the use of a translation had come into such general and accepted use that it ought to be retained, that name should be written as one word.[145] Though these rules were not always strictly followed for the Comanche, they probably accelerated and gave direction to changes already begun. In legal and administrative contexts such as land allotment, distribution of tribal income, inheritance, marriage, hospitalization, enrollment in boarding schools and voting, in short, as the Indians became more and more involved with the ways of the Whites, a fixed legal name became increasingly essential.

Every phase of the transition in naming

[144] Martha L. Buntin, History of the Kiowa, Comanche and Wichita Indian Agency, M.A. Thesis, p. 100, University of Oklahoma, Dept. of History (Norman, Oklahoma; 1931).

[145] F. W. Hodge, Handbook of American Indians BAE-B 30, Vol. II, p. 18 (Washington, D. C.; 1910).

practices can be noted in the list of Comanche names. First, there are 175 individuals listed on the rolls by Comanche given names only. Thus, Tahkony, ta?koni? *one who heads something off*, a man of 72, is married to Ni he vah, naiviwá·? *one with no beauty*, 73. Of these 175 persons,[146] 107 are women with an average age of 67.9 years and an age range of 44–103 years; 68 are men with an average age of 63.9 and a range of 41–85 years. The average age for both men and women is 66.3 years. Fourteen of the men have alternative Christian given names or given names and a surname after the father. Tooahnipah, tuinï?pï? *young man*, 57, also has the name Wilson Simmons; Mahvochuky, mavicu?ki? *one who rubs with the flat of the hand*, a man of 50, is also known as Wylie Yellowfish after his father. Which of these alternative names is preferred by either Indians or Whites differs from case to case. A few women also have additional names. Ukapitty, ?ï?kïvetï? *new daughter*, a woman of 56, has the alternative name Yellowback, which belonged to her father. It is probable that more persons have such supplementary names, especially first names by which they are known to Whites, but these do not appear on the agency rolls. Conversely, a great many younger people also have Comanche names though they are seldom used and are not recorded.

The names of a considerable number of women, as they are given on the census list, reflect the process of change in some detail. Nellie Tis so yo, tïsoyó·? *one who has confidence in someone else*, 59, is the married name of Wuth take wahbitty, wïhtïkwavi?tï? *arrives and strikes*. This is probably one of the earliest instances of a woman officially assuming the name of her husband at marriage, although among her friends and relatives, as is often the case, she is known by her own Comanche name. Josie Tanishoti, tanísutai? *one who is loved*, is the married name of a woman of 47. Her maiden name was Tittarritsa Namiquau from tïtarïhci? *wee little one*, and namakweyui? *one who strips himself*. The former was her own given name, the latter was her father's name. The Josie was acquired sometime after she had received her Comanche name, possibly at school or upon her marriage.

As near as can be determined from the rolls there are some 37 instances where the Christian name of a woman is not recorded until her marriage. The average age of these woman is approximately 47 years. One more example might be given: Clou Pakahwy, pa?kahwi? *one who throws an arrow*, is the married name of a woman of 52 whose maiden name is listed as Towakah Permamsu from tu·wiká·? *crow*, and pïhïmahmsu? *one who rejects a bunch of hides*, her father's name. The Clou is a Comanche mispronunciation of her own given name, Crow, translated into English.

Since no person over 41 is listed on the census rolls as bearing only a Comanche name, presumably the shift to the new naming system was effected by 1900. The accompanying table shows in some detail the rate of change through the years it spanned. Although the sample is small, the asymmetrical rise in the per cent of persons having Comanche given names at the age-interval 65–69 years probably reflects the turbulent conditions of the years 1871–75. These were years of unrest just preceding and during the confinement of the Comanche to the Fort Sill Reservation; years marked by the last raids and fighting with the Whites, and by an abortive messianic outbreak in 1873.[147] It is also apparent from the table that the women lagged considerably behind the men in acquiring the White system of onomastics.

At the present time the pattern of using given first names derived from American models and family surnames is in full sway. The family names are for the most part derived from the male line, usually from the

[146] Females constitute 51.5% of the 1940 Comanche population of 2394.

[147] E. A. Hoebel, The Comanche Sundance and Messianic Outbreak of 1873, AA 43: 301–303 (1941).

TABLE 1

Age Interval	No. of Persons			Number of Persons with Comanche Given Names Only			Number of Persons with Christian Given Names and Family Names			Per Cent of Persons Having Comanche Names Only		
	M	F	Both	M	F	Both	M	F	Both	M	F	Both
40–44	53	46	99	3	2	5	50	44	94	5.7	4.3	5
45–49	43	50	93	3	6	9	40	44	84	7	12	9.7
50–54	28	27	55	6	5	11	22	22	44	22	18.5	20
55–59	29	34	63	8	14	22	21	20	41	28	41	35
60–64	19	25	44	8	19	27	11	6	17	42	76	61
65–69	24	14	38	18	13	31	6	1	7	75	93	82
70–74	17	21	38	11	17	28	6	4	10	65	81	74
75–79	14	17	31	9	15	24	5	2	7	64	88	77
80 and over	3	16	19	2	16	18	1	0	1	67	100	95
Totals.....	230	250	480	68	107	175	162	143	305			

fathers or grandfathers of those who bear these newly established surnames. In no case does a surname stem from farther back than the third generation. Occasionally the surname is taken from the maternal line, from an aunt in one instance, but this is not the rule except in cases of illegitimacy or divorce. The adoption of a person's own Comanche given name as a surname along with an American first name is quite common, e.g., Casper Tis so yo, in which tïsoyó·? *one who has confidence in someone else*, is the Comanche given name of this man of 69. Family names are usually kept in their full original form, but with the agency's rendition of them in English spelling appearing on the rolls; for example, Harry Tobits ser kumah, tïvicikuma? *real male, or husband*; Lena Suah rah o lah, suará?ura? *one who meets somebody intentionally*; Carmelita Delphine Atetewuthtakewa, ?etiwïhtïkwa? *one who strikes with a bow*; Olive Chahtoeiebitten, cahto?ivitïn, *one who pulls something out on his arrival*; and Cecil Ahtoowoosserahle, ?otïwïsará·ki? *brown ears pricking up*.

Comanche names are only infrequently translated into English and these are for the most part medicine-animal names: Frank Redelk, Violet Yellowfish, Vincent Red Bird, Olive Black Otter, Lelia Yellowwolf, Thuma (from Therma) Chicken, and Philip Lookingglass may be cited. Among the Indians themselves the Comanche form is usually in more common usage.

The length in translation of many of the names, their common sexual reference, and their frequent unflattering or cryptic meanings would tend to preclude translation in a good many instances. Geanell Yokesuite, yoksuwaitï *one who attempts to have intercourse*; Strudwick Tahsequaw, tasikwana? *vagina smell*; Ella Nahdooanipah, na?-ruinïhpï? *only boy in the family*; Julia Monoessy, moná·si? *son-in-law*; Rachel Noyobad, noyowahtï *no testicles*; Kenneth Milton Sapkat, sapkatï *has a belly*; Delpha Zoe Topetchy, topehci? *after . . . he . . .*; Peggy Ann Keithtahroco, kïhtaruhku? *one with hard flesh*; Rita Jane Wauahdooah, wo?arua? *wormy young one*; and Randlett Pahkekumah, pahkikïma? *edge of an old dry hide*, are names that could hardly stand translation. Due also to the new morality a few possessors of more outspoken Comanche names have altered them to convey a blander meaning and these nicer forms are used in addressing them. Connywerdy, originally, ka?nawïa? *one with a slender penis*, was changed to kahnawï?rï? *tall and slender one*; Ahah, a woman of 70, whose name comes from ?a?h, the baby word for feces or something nasty, and is pronounced

ʔahá·ʔ, is also called ʔeʔhá·wïʔ, a meaningless word.

White surnames liberally sprinkle the Comanche list, but wherever these are found there is usually some degree of White blood. In addition there are 243 persons listed as having Mexican or Mexican and White ancestry. As descendants of captives these persons have legal status as Comanche. Among the Mexican names represented are: Cerday, Carpio, Farralla, Gonzales, Luna, Martinez, Madrano, Portillo, Rivaz, Robbles, Senoya, Terasaz (from the Comanche pronunciation of the Christian name Teresa, tïrasas), Trevino, Viadurri, Vidana, and Villavana.

A great many mixed-bloods carry the name of a forebear who has married into the tribe. Among these names are Smith, Jones, Brown, Glover, Cooper, Chandler, McCarthy, McArthur, Kelley, Le Barre, La Sawyer, Fisher, Dietrich, Risener, Shoemate, Chisholm, and Fawbush. Quanah Parker, the famous Comanche chief, was the daughter of a White captive, Cynthia Parker. Surprisingly few full-blooded Comanche, however, bear White surnames. The total number does not exceed 20, and they are all younger persons. Some of these names are: Pauline Smith, Perry Lonesome Heath, Roderick Youngman, Joseph Kelly, Darrell Bread, Frank David Bull, Bonnie Louise Plumlee, Pasquerita Pratt, Erwin Lee Cude, and Edith Marlene Johnson. In a few instances the surnames are those of second, White husbands. It must also be noted that several of these names, such as Youngman, Bread, or Bull, could also be English translations of Comanche names.

Mispronunciations and misunderstandings, working in both directions, have led to many curious entries on the tribal rolls. In many cases the agency spelling has obscured the meaning of the Comanche name, or at any rate, has made it ambiguous. White pronunciations have tended to become accepted by the Comanche themselves, especially the younger people, and this is still another factor in making original pronunciations and meanings opaque. There are quite a few instances of the father's English given name being taken as the family name. Anna Harry, Dorothy Tommie, Rhoda Pauah (poʔoʔ, from English, *Paul*), and Ned Timbo, from his father's given name, tïmo·ʔ, (from English, *Tim*, *Tom*, *Timothy* or the like) which was bestowed by a government agent, are examples. James Pedicks (from Felix), and Lilly Tomah sah, from Thomas or the Spanish, Tomas, or the Spanish feminine form, Tomasa, may be added.

A man of 60 is listed as Andrew Aunahro (Perdasofpy). Perdasofpy is an alternative family name after his father, pïhïrïsohpeʔ *one who dips in something hairy*. The Aunahro is simply the Comanche pronunciation of *Andrew*, ʔamaruʔ. Paul Pauau (Paul), 69; and Minnie Mahney, from Minnie, pronounced menï·ʔ, a woman of 53, also appear on the rolls; their first and second names are really one and the same. One man whose Comanche name was tuniwïkitï *one who runs as hard as he can*, appears on the rolls as Tony Wocket. Hovaruthka, huvarïhkaʔ *coffee eater*, a man of 69, has the alternative name of Eli Coffee. Eli was said to have been derived from *eater*.

Several Comanche family names stem from Spanish loanwords: Komahcheet, kuhmahcï·tO, from comanchito, the Spanish diminutive of Comanche; Kopaddy, kupá·reʔ, from compadre, *Godfather or friend*; and Tahuano, tïhá·noʔ, from tejano *Texan*. These, along with a goodly number of Spanish given names, represent a major contribution of Spanish to the Comanche language.

A new fashion in given first names may be observed since the custom was first introduced to the Comanche some 70 years ago. There is a distinct change from simple, single given names to rather elegant and fanciful double names. This shift has no doubt taken its cue from a similar change in the local White naming preferences, but the

writer has the impression, abetted by a checklist of the names of 335 Indiahoma school children, that the change is more pronounced among the Indians than the Whites.

The plainness of the names of older persons is attested by the following list of given names of 51 men 55 years old or over (figures in parentheses indicate plural occurrences): Andrew, Albert (3), Alexander, Baldwin, Ben, Bert, Casper, Charles, Codose or Crose (from Spanish, cruz *cross*), David, Edward, Eli, Emerson, Ernest, Eugene, Frank, Fred, George, George E., Grover, Gus, Herman, Howard, Jack, Jesse, John, Johnson, Joseph, Joshua, Mat, Millet, Nathan, Oscar, Otto, Paul, Reuben, Robert D., Rudolph, Samuel, Terrence, Thomas, Tim, Timbo (see above), Tom, Wahnee (from wane? *fox*), Walter, Willie, Wilson, and Mike.

The given names of 86 women of 45 or over are likewise old-fashioned and simple: Ada, Alice (3), Annie, Bertha, Bernice, Bessie, Betty, Birdie, Clou (see above), Cynthia, Daisy, Dorothy, Eliza, Ella (3), Elsie, Emily, Emma (2), Erma, Esther, Eva, Faith, Fern, Grace, Helen, Helen Rose, Ida, Ione, Jane, Josie, Julia, Kate, Kitty, Laura B., Lena, Lillie, Linn, Lucy (5), Lulu, Mabel, Maggie, Mamie, Mary (8), Mary Ellis, Mary P., Mattie, Maude, Minnie, Mollie, Nanny, Nellie, Nora (4), Ophelia, Pearl, Polly, Rachel, Rose (3), Roxie, Ruth, Sallie, Sarah (2), Susan, Susie, Thuma (Therma), and Woonardy.

The giving of two first names seems to have come into vogue within the past few decades. Only a small number of the many persons who have double given names are over 16 years old. If the middle name is written simply as an initial, the individual is usually over 17 years old. Except for the fact that such girls' names as Ann, Jean, Mae or May, and Joyce, and boys' names such as Lee, Allen, and Wayne occur more often as second middle names than first names, middle names are not very different from first names. Family names are taken as middle names in only a few instances. The bearers of these double names are often called by them both. This is especially true for girls having such hyphenated names as Anna Lee, Betty Mae, Barbara Ann, Carol May, Delores Ann, Ella Fay, Geneva Joe, Ida Lura, Linda Joy, Norma Lou, Phoebe Ann, and Sandra Jean.

Comanche given names show a great deal of individuation. For a total of 1989 Comanche with first names there are 1196 individual names (including double names), or a different name for each 1.66 Comanches. There are 587 names for 985 males, or a ratio of 1.68 persons per name; and 609 names for 1004 females, a ratio of 1.64. Of the total number of names there are 551 double names (259 male, 292 female). From these figures we see that the female names are slightly more individualized than those of the males, and judging from the greater number of double names, more elegant. One may adduce several possible explanations for this diversity of names. It may reflect the old Comanche pattern of a distinctive name for each person as well as the taboo on using the name of a dead person. Given names rather than family names may have been used to distinguish different persons, especially in the early reservation days, since family names were so hard for the Whites to cope with. Or it might simply be the result of a fashion of choosing names that are different and rather fancy.

The following first names, listed by the number of times they occur, are the ones most frequently bestowed on males: Frank 18, James 18, George 17, John 16, Samuel 16, Albert 14, Robert 13, Henry 12, William 12, Edward 11, Bert 8, Ralph 8, Charles 7, Kenneth 7, and Raymond 7. If middle names are included, the ranking is changed; some new names are added and others are dropped: James 29, Lee 25 (the commonest middle name, occurring 18 times), George 24, William 24, John 23, Frank 22, Edward 22, Robert 21, Albert 20, Henry 20, Charles

16, Samuel 16, Kenneth 13, Wayne 11, Raymond 10, Harold 9, and Bert 9.[148]

For females the commonest single first names are: Mary 24, Alice 12, Marie 9, Lena, May and Rachel 8, Dorothy, Ida, Mabel and Velma 7, and Bertha, Bessie, Elsie, Lucy, Maude, Pearl and Sarah 6. If both first and second names are included, the order again is changed: Mary 39, Ann 35, Jean 34, Marie 31, May 19, Ruth 15, Alice 15, Dorothy 13, Joyce and Betty 12, Frances and Mae 11, Ida and Barbara 10, Rachel, Lena and Mabel 9, and Lee 8. As middle given names the following are the most frequent: Ann 34, Jean 32, Mae 11, May 10, Marie 19, Joyce 9, Lee and Ruth 8, Frances 7, Jo, Lou and Rose 6, Joy and Lois 5, and June, Kay and Fay 4. It may be noted that there is less variety in middle names than in first names.

Given names derived from Comanche are few in number. For males there are *Gary Mahesuh*, mahisua? *one who thinks of war*; Vernon Tabbytosavit (a middle family name), tavetosavItï *white sun*; Wahnee, wane? *fox*. Hovarithka, huvarïhka? *coffee eater*; and Weckeah, wehki? *hunter*, are feminine examples. All told there are about twelve such names on the census rolls. The only Comanche with three given names is Jewel Ann Waumaconnie Wallace. The Comanche name comes from the given name of a woman of 80, wïmako·ni? *one who chases someone back with a club*.

With the more prosaic names listed above, the following examples give a representative selection of Comanche given names:

Male first names: Adrian, Amos, Algernon, Archie Dean, Arron, Arvol, Augusta Norman.

Baby, Belindo, Bertrand Eugene, Bobbie Jewel, Bruner, Bucky, Bud, Buntin, Burnell.

Capps, Caudolario, Celso, Charles Malong, Clay, Cleatis, Cleveland, Clyde Berlyle, Cokey (Cookie), Conny Coffee.

Darrell, Delrio, Donell, Dumas, Dyson K.

Elbus, Eldridge, Elgin, Elroe, Errol Kent, Eustace.

Fay, Ferrell, Forrest.

Galvus, Garrison, Given, Givens Rain, Guy Tucker.

Haddon, Hawk, Herschel, Hezekiah, Hoke Smith, Hollis, Honey, Horace, Hugh.

Ike, Inman C.

Jamison Redith, Jeriyah Dedodge, Jerome Chester, Jester, Joshua, Joubert, Joy, Joyce Lee.

Kelly Waddell, Kelton, Kent Orval, Kermit, Knox, Kye.

Lamont, La Rue, Laverne, Lemuel, Lewellyn, Lincoln, Linn, Lovell, Luepp, Lumer, Lupe Anderson, Luther, Lyon.

Madison Berkley, Major, Malcolm, Mark, Matthew, Max, McEvans, Mead, Meech, Menno, Merrill, Mikey, Moffett, Montgomery, Moran, Moses.

Napoleon, Nesler, Nickolas.

Oliver Hinson, Oscar.

Pernell, Pierson Page.

Rafey, Randlett Cragg, Reaves, Reuben, Riley, Roe, Roderick Parrish.

Schley, Scott Ferris, Silcott, Stacy Lee, Stanford Walker, Strudwick, Sunrise.

Tennyson Berry, Terrance, Thurman Ray.

Vandal, Vidale, Videll, Voris.

[148] Simon Newton (The World Almanac, 1921, p. 150) sought to determine the most popular American given names by examining 100,000 names in biographical dictionaries, Army and Navy registers, Masonic rosters, and the Detroit City Directory. For comparative purposes the 20 most popular names are listed:

1. John 8280	11. Samuel 1628
2. William 7611	12. Frank 1570
3. James 4259	13. Harry 1112
4. Charles 4253	14. Richard 1027
5. George 4171	15. Francis 1003
6. Thomas 2710	16. Frederick 1000
7. Henry 2366	17. Walter 970
8. Robert 2303	18. David 967
9. Joseph 2266	19. Arthur 904
10. Edward 1997	20. Albert 862

For the Comanche the ten most popular single first names make 15% of the total, including double names 23%, while the ten most frequent American names make 42% of the total. It may also be noted that the order of preference differs.

Weldon, Wellington, White, Whitt, Willerton, Woodrow Joyce.

Women's names offer the following: Aldeen, Alverta, Angelia, Ardena Mae, Anona A., Ardis, Arrillia Mae, Avis Nadine.

Beattie, Belva Ann, Benal Lou, Berdenia, Blossom.

Caleda, Camille, Carla Dorena, Charlene, Chequita Ann, Cicily, Claudettia, Cleta Ruth, Cody, Colleen, Corrine.

Darling Virginia, Delpha Zoe, Dixie Dean, Dorcas, Dorphus.

Easter, Eilena Floy, Electa Mary, Eloise Lavena, Elva Jean, Emmet Ruth, Ethel Yvonne, Etheline, Eudora, Eula, Exie, Eyeta.

Fanchon Willene, Floy Juanita, Francella Ann.

Garnett, Geniece, Goldie, Greta, Gwendolyn.

Happy, Hazel, Hester, Hilda, Hope Maurine, Hulda.

Imogene, Ioleta, Iris Dawn, Isa, Ivarine.

Jacqueline Violet, Joebnya, Joeleen Frances, Johnson Louise, Judea, Jueretta.

Kathleen.

La Denna Vita, Ladora Fay, Lahoma, La Nell, Lavona, Leilani, Lottsee, Lucreta, Luetta.

Mada Louise, Margerine, Marylyne May, Melva Joe, Metzie Madeline, Mona.

Nada, Nemah, Neomi Lorene, Normal Jean.

Oma Jean, Oneda, Opal Pearl, Opaletta, Osie.

Pasquenta, Patsy Mozelle, Pauline Zella, Phoebe Ann.

Quanah Kay.

Reba Joe, Rechandle, Richenda Jean, Reona, Ruby Fern, Ruth Odella.

Sharon Rose, Sophia.

Thedoshia, Theone Maxine.

Vellarine, Venee Lois, Verbena, Verneta Ruth, Veronica, Vida, Vinita.

Wanada, Werta Jean, White Rose, Wilhelmina Jean, Willene, Winona, Wynema, Wywena May.

Yvonne, Zelma, Zenia Mae, Zona.

There are several Comanche who are named after illustrious people: Garner Roosevelt Atetewuthtake, Kit Carson Farwell, Charles Lindbergh Ticeahkie, Calvin Coolidge Pohapatchako, Franklin D. Parker, General Scott Tonemah (General Scott was stationed at Fort Sill, Oklahoma for many years), and Bennie Leonard Caddo (Bennie Leonard was a champion prizefighter). Three persons have the name Quanah, kwana? *odor*, which was the first name of the Comanche chief and warrior, Quanah Parker.

White given names, as has been suggested above, suffer some phonetic distortion when pronounced by Comanche with little or no knowledge of English. These mispronunciations quite frequently become generally accepted. The following are examples: nere? *Nelly*; mïru? *Myrtle*; menï·? *Minny*; maikI *Mike*; to·me? *Tommy*; ?ombre? *Audrey*; pesa? *Bessie*; and ?estï? *Esther*.

The given names of persons having Mexican blood or a mixture of White and Mexican ancestry include the following names derived from Spanish: Anacleto, Antonio, Boniface, Caudolario, Cicario, Cruz, Felipe, Gilberto, Hepardo, Jesus, Lorenzo, Louis, Migel, Ricardo, Sostenes, Sotaro, Tomaso, all masculine names. Feminine names include the following: Carlotta, Carmen, Christabelle, Clemencia, Delores, Devita, Florentina, Guadaloupe, Herlinda, Isabelle, Juanita, Juana, Kalora, Lorenza, Marie, Octaviana, Refugia, Rosetta, and Speranze.

There is apparently a recent tendency for persons of Mexican-Comanche ancestry to give their children American names instead of Spanish ones and most of these names are quite indistinguishable from the others on the rolls. The following are names of males who are listed as having Mexican blood: Adrid John, Archibald, Ben, Clarence, Donovan Earl, Eribert, Franklin D., Hillarie, J. P.,[149] Leon, Michael, Nabor, Peairs

[149] The practice of giving only initials for a

(Pierce?), Shannon B., Simon, Woodrow Wilson, Wyvale. Feminine names offer the following: Audrea, Balinda Mary, Cleo Marcelle, Dixie Diane, Ernestine Marie, Freddie Joe, Garnet, Hattie, Laurania Peral, Leila Viletta, Luvenia Yvonne, Mandy Louise, Marilyn Panzie, Marrel F., Mollie, Sybil, Nettie Belle, Philomena Marian, Prudence, Ruby, Sharon Vivonne, Sonia Youmaine, Tinnie, Udee, Una, Winona and Zelia.

Thus, we have traced the acculturation of one aspect of Comanche culture, personal names, from the old pattern described above to the whole-hearted adoption of the local Southern White naming patterns. There is little left of the old, except perhaps in the great individuation of given names. The actual circumstances of the giving of first names may show a few faint traces of the old customs, but even that is doubtful. The degree of acceptance of the new naming practices may be taken as a rough index of the participation of the Comanche in the culture of the Whites. The older, relatively less acculturated Comanche still bear individual names, while the younger generations have adopted the White pattern to the extent that the old way has entirely yielded place to the new.

7.0. Thus far the major portion of this paper has been devoted to the first of two objectives—a description of the effects of culture contact on the Comanche language, chiefly the lexicon. The balance of the paper will be addressed to the second objective, namely, an attempt to demonstrate the utility of these linguistic data for the student of acculturation and culture change. Some general observations based on an appraisal of the total acculturation vocabulary will first be given. There will then follow a set of postulates on language with special reference to culture change and a series of propositions designed to relate specific linguistic data to the social, cultural, and historical facts of which they are diagnostic.

7.1. On examination of the Comanche occulturation vocabulary as a whole it is quite evident that the preponderance of new terms are those for material aspects of White culture. While it cannot be assumed that Comanche knowledge of White culture is restricted to those traits for which the language provides unitary terms, this fact bespeaks greater familiarity with the tangibles of Western culture than with non-material traits. Nor is this surprising, as the things of daily use tend to be the first part of one culture to be both presented to and accepted by another culture. Moreover, material culture does not necessarily require a spoken introduction to a borrowing people. Non-material or intellectual culture, on the other hand, is essentially transmitted through the medium of language, and such knowledge, unless it is sheer mimicry, must necessarily be translated from one language into another through the good offices of one, a few, or many bilingual speakers. It is probably unrealistic to expect that any significant corpus of alien intellectual culture, especially that of an esoteric nature, will be incorporated into a borrowing culture or accommodated by its language unless it is espoused by some special class of persons such as scholars, priests, rulers, or artisans who occupy positions of some prestige or power. Status groups such as these were non-existent in Comanche culture, and it is significant that those Comanche most conversant with Western intellectual culture also know English best and use English in discussing these aspects of Western culture.

The words added to the vocabulary are almost entirely nominal forms. Adjectives, adverbs, and verbs, except as these may be derived from nominal forms, are conspicuously absent and words for abstract concepts such as science, government, machine, etc., are rare. The religious terminology

given name is not infrequent in Oklahoma, but this is the only case for the Comanche.

where one might expect to find the greatest proliferation of abstract terms is likewise relatively barren. It reflects a religious fundamentalism preached by parable and illustration. Ideas like resurrection, apostasy, holiness, salvation, and penitence are translated, if at all, by clumsy descriptive phrases or sentences.

Several segments of White culture have received some linguistic elaboration. There are words for fourteen or so breeds of dogs, and the vocabulary of terms for card playing and gambling is fairly rich. Both of these flairs can perhaps be explained in terms of interests already present in the culture. Linton mentions the great preoccupation of the Comanche with the dog,[150] and Steward notes the Shoshone predilection for gambling, common throughout North America, and which was shared by the Comanche.[151] There are a great many words for various diseases and many of these such as the word for diabetes, called *sugar sickness*, evince a good deal of sophistication. Indeed, the diseases the Whites brought and the havoc they wrought could hardly have escaped attention. As one informant said, "Before the Whites came there was nothing but toothache". Mooney mentions smallpox epidemics in 1816 and 1861–62. Cholera was rampant in 1849 and in 1882 measles and whooping cough broke out. Measles again reached epidemic proportions in 1892.[152] At the present time a well-equipped and staffed hospital is available and, in line with the general government health program, some knowledge of medicine is available to the Comanche.

The list of terms omitted from the acculturation vocabulary is perhaps as instructive as those included in it. The fact that a trait of Western culture is not named does not necessarily mean that it is unknown to the Comanche, or that it cannot be described by them. But it does seem to indicate that it is not generally known or widely accepted. Thus, the very fact that a new trait is named is a good index of its general acceptance. One is tempted to hypothesize that the new words which are linguistically most economical or conform closest to Comanche language habits are those for the traits most completely integrated into Comanche culture.

The scarcity of technical, scientific, or scholarly terms from the list of new words has already been commented upon and it is pointless to note those omitted. However, there follows below a selected list of familiar traits of Western culture which are not specifically named by the Comanche although they may be designated by more general terms (e.g., pekwinarohtïman *canned fish*, may refer to *salmon*, *sardines* or *tuna*; and *lettuce* or *asparagus* are included in the general word for *vegetable*, pokorïhkapï *fruit food*): advertisement, asbestos, asparagus, blow-torch, bluing, bomb, borax, canary, cellophane, chick-peas, cider, cockroach, dictionary, dill, egg-plant, elevator, fountain, hinge, hobo, hops, insurance, lettuce, lightning-rod, lilly, lobster, magnet, menu, monument, organ, padlock, pickle, pretzel, pulley, refrigerator, rainspout, rose, screw, shrimp, skis, slot machine, sponge, sprinkler, starch, thermometer, tulip, vinegar, wax, whale, wine, zipper.

Finally, we may say that while Comanche contact with White culture had had far-reaching effects, the Comanche language has preserved its essential form. Comanche has reacted by adapting itself to new cultural experience by using its own linguistic resources rather than by extensive borrowing from an alien tongue. Indeed, there is evidence that relatively few loanwords from English, which today is the dominant com-

[150] Ralph Linton, The Study of Man, pp. 428–29 (Appleton-Century, New York; 1936).

[151] Julian H. Steward, Culture Element Distributions: XIII, Nevada Shoshone, Anthropological Records, 4: 2, p. 247 (University of California, 1941).

[152] James Mooney, Calendar History of the Kiowa Indians, 17th Annual Report, BAE (Washington, D. C.; 1898).

peting language, were added prior to the turn of the last century.

7.2. In the interest of conciseness the numbered statements which follow are phrased as a series of postulates, a device suggested to the writer by one of Bloomfield's papers.[153] Some of these postulates attempt to make explicit certain assumptions about language which are basic to this paper, while others state general observations on linguistic change, especially those changes induced by culture contact.

1. Language is a part of culture and, in its semantic aspects, symbolic of culture.

2. Change is a normal linguistic process which is not autonomous but attributable to psychological, social and cultural causes.[154]

3. The rate of linguistic change is variable and may be affected by both linguistic and extra-linguistic factors. Among the latter, some of which may also operate in initiating change, are the size of the speech community; types and extent of use of mass communication media; literacy; relative prestige of competing languages or dialects; degree of bilingualism or multilingualism; type, intensity and duration of cross-cultural contacts.[155]

4. Linguistic change is a part of total culture change, although these changes are not necessarily coextensive or parallel.

5. Because language is, in part, symbolic of culture, linguistic changes may reveal culture changes whether the latter stem from culturally internal or culturally external sources.

6. Culture contact may induce changes in both the formal and semantic aspects of language.

7. Formal changes may arise: externally, due to the direct influence of a foreign language through linguistic borrowing or indirectly through modifications in the native language introduced by bilingual speakers; internally, due to extensions of meaning, additions to the vocabulary, or other linguistic adjustments which may in turn initiate a whole series of compensatory phonetic or grammatical shifts following new analogy patterns.[156]

8. Semantic changes are accomplished by extending or modifying meaning or by adding to the vocabulary.

9. Vocabulary is increased by: coining new words; incorporating loanwords; translation-borrowing.[157]

10. No knowledge of the language of an impinging culture is required for meaning extensions or new coinages and only native linguistic materials are used. This is designated PRIMARY ACCOMMODATION. A minimum knowledge of a donor language is necessary for linguistic borrowing in the form of either loanwords or loan-translations. Such linguistic borrowing is termed SECONDARY ACCOMMODATION.

11. The extent to which any given language uses primary or secondary linguistic accommodation, and the several devices subsumed under these terms, in handling new cultural acquisitions depends upon both social, cultural and historical factors and upon the structural characteristics of the language.

7.3. The twenty numbered propositions which comprise the final section of this paper should be viewed as essentially hypotheses rather than conclusions. While some have face validity and others are sup-

[153] Leonard Bloomfield, A Set of Postulates for the Science of Language, Lg 2: 153–64 (1926).

[154] Harry Hoijer, Linguistic and Cultural Change, Lg. 24.335–45 (1948).

[155] Uriel Weinreich discusses both linguistic and extra-linguistic factors in language change in his book, Languages in Contact: Findings and Problems (New York, 1953).

[156] Ways in which linguistic changes may be effected are discussed by Joseph H. Greenberg, Charles E. Osgood, and Sol Saporta in their section on Language Change in Psycholinguistics, Charles E. Osgood and Thomas E. Sebeok, Editors, Memoir 10 of IJAL (1954).

[157] While these three devices appear to the writer to constitute the principal ways of adding to the vocabulary, they may of course be broken down into various sub-types. See, for example, Einar Haugen, The Analysis of Linguistic Borrowing, Lg. 26.210–31 (1950).

ported by Comanche data, many require further substantiation before they can be accepted. Although the propositions are in the main derived from and illustrated by Comanche material, they are cast in generalized terms in the belief that they are relevant to other languages as well. Related propositions are grouped together, but they are not otherwise classified.

1. The total acculturation vocabulary will indicate the range of contact, the aspects of culture most affected by acculturation, and provides a sort of catalogue of traits which have been accepted by the recipient culture.

2. The presence of a single word (or several synonymous forms) in common usage in a language indicates that the trait denoted has been relatively widely accepted by the borrowing culture. Conversely, if a new trait is not so named, it presumably has not been widely accepted.

3. If an unanalyzable stem has been extended in meaning, it may be assumed that an analogue of the new trait existed in the native culture. Thus, the extension of co·mO which now refers to *modern beads of various materials*, and wihI to *steel knife* indicates that functionally similar objects were found in aboriginal Comanche culture. Ethnographic notes tell us that the prototypes of these new products were bone beads and the flint knife. In some instances the original referent may be obsolete or obsolescent; e.g., wosA, formerly *parfleche*, now *box, pocket, container*.

4. Conversely, if a new trait is not designated by a simple extension of meaning, one may assume that no close analogue was to be found in the native culture. Thus, the descriptive word for boat, pawovivu·kU *water board horse*, indicates the absence of watercraft in aboriginal Comanche culture. This word for boat also suggests the great importance of the horse as a means of transportation.

5. Since meaning extension depends upon the formal, functional or symbolic equation of the old and the new, such extensions often afford clues not only as to how new traits are perceived, but also to the way in which they are integrated into the culture. The extension in Comanche of puha *supernatural power* to the spheres of both medicine and religion is an example (see **4.1**).

6. When a meaning has been extended, if a modifier is used to distinguish between what is native and old and what is foreign and new, the relative importance of the two traits may be indicated by the differential use of these modifiers (see **4.1**).

7. A rare distribution of a phoneme or a deviant cluster of phonemes in a word suggests that the word has been borrowed; e.g. kv and ks in sikvic *six bits* and taks *tax, taxes*. The initial ts in tseetsee fly is an example from English.

8. A polysyllabic word of more than the usual minimum length which is unanalyzable into smaller meaningful elements is apt to be borrowed:[158] tomá·ta? *tomato* (tomate, Span.); makaró·ni? *macaroni* (Eng.). In both of these examples, additional evidence of their foreign origin is afforded by the fact that the stress does not fall on the first syllable (see **3.2.**)

9. In general, the more closely a borrowed word is assimilated to the phonetics of the borrowing language, the older it is and the earlier the trait it denotes has been introduced into the culture.

10. The longer a loanword has been in a language the greater the tendency for it to acquire a wider range of meaning or to be used metaphorically or in figurative expressions; e.g., mu·ra? *mule*. (Span., mula) in ?evimú·ra?ya?ke? *frog*, literally *green mule crier*.

11. The linguistic source of a loanword will suggest the provenience of a new cultural acquisition; e.g., the Comanche were

[158] Edward Sapir, Time Perspective in Aboriginal American Culture, A Study in Method, Memoir 90, Canada Dept. of Mines (Ottawa, Canada; 1916) p. 69, discusses this point in some detail.

introduced to the mule, bread, sandals and vests by the Spanish; to money and administrative offices by the Americans.

12. The areas of culture represented by loanwords may indicate differential effects of several impinging cultures (see **4.3**).

13. The number of loanwords in a language, while no absolute index, may indicate the extent or amount of contact one culture has had with another (see **4.3**).

14. Other things being equal, the greater the proportion of loanwords and loan-translations in a language, as opposed to meaning extensions and new coinages, the more intense, intimate or lasting the culture contact has been.

15. Since loan-translation requires the borrowing of a foreign mode of thought, description or expression, rather than the incorporation of a foreign word, it reflects a more subtle influence than the borrowing of loanwords. The use of loan-translations in any number may be indicative of a deeper and more thorough-going acculturation (see also proposition 18).

16. When the analysis of what is apparently a descriptive word is obscure there is a strong likelihood that it is an older word: pïesu?ve? *bandana*, and pimoró·? *cattle*. In these two examples there is, of course, also the possibility that meaning extension and borrowing respectively have occurred.

17. If phonetic or grammatical reduction occurs in a descriptive word, or phonetic reduction in a loanword, it is apt to be of relatively early origin: ?eksahpana? *soldier*; in this word ?eka- *red*, has been reduced to ?ek-. In tehnsé·?, from English *ten cents*, phonetic reduction has also occurred.

18. The elements used in new descriptive formations will often indicate the approximate date or period of introduction of a new trait. The Comanche word for *soldier*, ?eksahpana? *red belly*, describes a type of uniform no longer used; the words for *Democrat* and *Republican* refer to party symbols, the rooster and the eagle, of an earlier era. One could also include here the descriptive terms for introduced articles, such as the *beaver hat*, *cauldron*, or types of blankets, which are no longer in general use, although the names for them are retained in the vocabulary.

Modes of perception as these may be dictated by language and may also be revealed in new descriptive words.[159] The Comanche characteristically describe many new traits, particularly implements and machines, in dynamic, functional terms rather than static ones of color, size and shape. One is tempted to speculate whether this may be correlated with Comanche personality as described by Kardiner who comments upon, "the emphasis on activity itself",[160] and notes their capacity to deal skillfully, assertively and self-confidently with the world.

Attitudes toward new traits, and temperamental or other psychological characteristics may also be reflected. The words for *whiskey* and *prostitute* both use the word, po?sa, which, while translated *crazy*, connotes generally deviant behavior.[160a] From the contexts in which it appears, ?esi-, literally *grey*, also has broader connotations of being nondescript, drab, or unseemly. It is significantly used in the word for captive, ?esinï·mǐ (nï·mǐ *person*).

The word for White man, taivo·?, is used in the sense of *alien* to apply also to the products of white culture and to other races of men. The use of ca- *fine* or *good* in describing silk and gems indicates that these things are highly valued. The word for *rice* (*worm* or *maggot food*), may reveal a

[159] See Benjamin L. Whorf, Four Articles on Metalinguistics, Foreign Service Institute, Dept. of State, (Washington, D. C.; 1950); also D. D. Lee, A Primitive System of Values, Philosophy of Science 7: 355–365 (1940) and The Linguistic Aspects of Wintu·' Acculturation, AA 45: 435–440, especially, pp. 437–39, (1943).

[160] Abram Kardiner, The Psychological Frontiers of Society, p. 94, (Columbia University Press; New York, 1945).

[160a] The Blackfoot word for crazy is similarly employed. See L. M. Hawks, Jr., A Psychological Exploration in the Blackfoot Language, IJAL 20.195–205 (1954).

distaste for the food when first encountered. —or it may simply memorialize a matter-of-fact observation that boiled rice does indeed resemble maggots. The vulgar words for *cheese* (**5**), the word for *condom* (*rubber foreskin*), *gonorrhea* and others reflect the absence of prudery in sexual matters.

19. Where new vocabulary has clustered one may look for cultural interests or flairs which may either have pre-existed in the culture or have been acquired (see **7.1**), but in the latter instance revealing aspects of the donor culture which have been most eagerly seized upon, most salient, or as in the case of diseases among the Comanche, indicating conditions peculiar to the time of contact.

20. The core of unanalyzable words, especially nominal stems, in a language usually denote traits that are of considerable antiquity in a culture.[161] Compounds which embody these core words would therefore necessarily refer to traits subsequently introduced. The caveat that meanings do change must be borne in mind, but by applying this principle one observes that Comanche has a great many unanalyzable stems for animals whose range includes, or in some cases is confined to,[162] a more northerly habitat, while the names of most animals indigenous to the Southwest are analyzable compounds, e.g., ?evikuyú·si? *road-runner* (*green quail*); puhitó·? *turkey* (*grazes in the grass*); see also the words for opossum (**5**). On the basis of such evidence one could postulate that the Comanche had moved into the Southwest from a more northerly location.[163]

The writer hopes the point has been made that an ethnolinguistic approach not only provides useful leads and insights into society and culture, but adds a new dimension to the study of acculturation as well.

[161] See also Edward Sapir, Time Perspective in Aboriginal American Culture, A Study in Method, Memoir 90, Canada Dept. of Mines, pp. 54–5 (Ottawa, Canada; 1916).

[162] For example, tuhkU *moose*. Albert Gallatin, A Synopsis of the Indian Tribes North of Mexico, Trans. & Coll. of the Amer. Antiquarian Society, Vol. II, (Cambridge, Massachusetts; 1836), notes a Comanche word, augi, for *salmon*, a word that was obsolete in 1940.

[163] Edward Sapir, Internal Linguistic Evidence Suggestive of the Northern Origin of the Navaho, AA 38: 224–235 (1936), brilliantly marshalls linguistic evidence which suggests an earlier northern location for the Navaho.

ATHAPASKAN NUMERAL SYSTEMS*

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0. Introduction
1. Charts and analysis
2. Northern Athapaskan systems
3. Pacific coast Athapaskan systems
4. Southern Athapaskan systems

0. Numerals have had a continuing, if small, place in anthropological and linguistic literature for at least a century. Even the briefest vocabularies collected by travellers, missionaries and traders have included numerals; comparative charts of numerals have been exhibited as proof of genetic relationship for the most disparate assortments of languages. Tylor devoted a chapter of Primitive Culture to numerals and their origin, and at least one 19th century scholar attempted to prove the primeval unity of mankind by the use of carefully selected numerals from languages all over the world.[1] Indeed, most of the early interest in numerals centers on the problem of their origin. Some attempted to establish the stages through which all numeral systems must have passed in the journey from simple terms for one, two, three to the "ideal" (i.e. Indo-European) decimal system. There was a penchant for classifying all systems in terms of a limited set of a priori labels; individual systems were not studied in terms of their "own genius". Yet just as a "Latin model" is inadequate for the diversity of structures found in the languages of the world, so the simple labels "decimal", "vigesimal", etc., are inadequate for the diversity in the specialized substructures of the numeral systems.

This fact was recognized by Salzmann in his programmatic article of a few years ago.[2] An attempt to apply his principles of analysis in the early stages of the Athapaskan study found them inadequate. His operational pattern, postulating that a numeral must be analyzed in terms of a mathematical operation (i.e., addition, subtraction, etc.) if it contains a numeral morpheme plus one other morpheme, led him to interpret Siuslaw *seven* ˈxa·cʔu·ˈqta·max as 2 + 5; yet *two* is ˈxa·cʔu·, *five* is ˈLxaˈpˈs, while *six* is ˈqati·mx.[3] With Salzmann's analysis, the Siuslaw system would not be distinguished from one in which *seven* actually contained the term for *five*. But in fact, Siuslaw *seven* contains the term for *six*, having the same consonants in the same order, while the vowel interchange is analogous to a frequent process that gives such alternants in Frachtenberg's Glossary as tsísqan, tsásqin *deer*, pEnís, pEnás *skunk*, úmłii, umálii *thunder*, etc.[4] Eskimoan also has numeral systems in which *seven* contains the term for *six*; an Athapaskan example is given in **2.5** of this paper.

Aside from such difficulties, the type of analysis demonstrated for several South American numeral systems does not bring out the similarities and differences significant for a comparative historical study.

* This paper is revised from an Indiana University M.A. thesis, written under the direction of Harold Driver, who helped develop the method used. I am also indebted to Harry Hoijer for guidance in the initial work during the 1953 Linguistic Institute; to C. F. Voegelin for many suggestions; to Dell Hymes for encouragement and many items of information; and to Clayton Barrett for making it possible to obtain Coquille numerals.

[1] Robert Ellis, On Numerals as Signs of Primeval Unity Among Mankind, London (1873).

[2] Zdeněk Salzmann, A Method for Analyzing Numeral Systems, Word 6.78–83 (1950).

[3] Ibid., p. 79.

[4] L. J. Frachtenberg, Lower Umpqua Texts, CU 4.109–128 (1914).

While Salzmann is right that "analysis and comparison based only on cycles . . . is not sufficient for the purposes of an exact descriptive or structural analysis of a numerical system", we did not find the promise fulfilled that his three patterns would "give us more workable and exact criteria for distributional and comparative studies of this particular language universal."[5]

In this paper, features are studied on the basis of their actual presence in the Athapaskan systems, as revealed by linguistic analysis of individual terms. Only after the analysis of specific features, their co-occurrences, and their distributions within Athapaskan have particular systems been given labels. (Only similarly inductive studies can determine which labels are appropriate for the numeral systems of other language families.) On this basis it is possible to trace not only the borrowing of individual terms, but also the diffusion of patterns.

1.0. Charts and analysis.

1.1. Charts I and II list the significant features of Athapaskan numeral formation, and show their occurrences in all the dialects or languages for which numerals were available. The features were discovered in the analysis of all numeral terms which were compounds. The numerals and the details of their analysis are found in sections **2, 3,** and **4** of this paper.

As regards formation of numerals below ten, the numeral systems have been classified into six types, on the basis of clustering of features observable in Chart I.

a) DECIMAL: separate terms for 1–10.

b) QUINARY: separate terms for 1–5 (except in the case of Kato which has *four*: *two-two*), and 6, 7, 8, 9 containing 1, 2, 3, 4, respectively. No Athapaskan systems have *five* appearing in these terms. In dealing with systems which did, it would be necessary to distinguish terminologically between them and systems like Athapaskan quinary.

[5] Salzmann, p. 83.

c) PAIRING: separate terms for 1–5, and 6 and 8 containing 3 and 4 respectively. In all cases the other element contained in 6 is the same as that in 8. In many of these systems 7 contains 3 or 4; in all of them, if 9 is analyzable it contains 1, or 10, or both.

d) QUINARY-PAIRING: a mixture of (b) and (c) in which 6 and 7 contain 1 and 2, while 8 and 9 are pairing (i.e., 8 contains 4 and 9 contains 1). (Kutchin has been classified as quinary-pairing though the clear mixture of these two types of systems does not occur in the order above; see chart and **2.5** for details.)

e) DECIMAL-PAIRING: separate terms for 1–7, and 8 and 9 pairing. Sarsi is the only member of this class in Athapaskan.

f) DECIMAL-SUBTRACTIVE: 1–7 separate terms, and 8 and 9 containing 1 and 2, respectively, plus a morpheme or group of morphemes signifying roughly *it lacks*. The element combined with 1 and 2 in the terms for 8 and 9 is cognate in all the numeral systems of this type; furthermore, it is completely different from all elements combining with 1 in terms for 9 found in pairing systems. All members of this class are found on the Pacific Coast. No pure subtractive system (6 containing 4, and 7 containing 3, and 8 and 9 containing 1 and 2) has been found among Athapaskan languages, but it exists elsewhere.

For the distribution of the above types among the Athapaskan languages, see Chart II.

1.2. Consideration of the structural types for formation of numerals below ten reveals that one of the most common is the pairing type. Alone, or in combination with quinary or decimal types, it is found from far northwestern Alaska (Koyukon) to the most eastern (Chipewyan) and most southern (Carrier, Sarsi) of the Northern Athapaskans. Languages employing only the pairing system for 6–9 cover a large continuous area in British Columbia. This system is NOT found in the Southern or Pacific Coast areas.

CHART I—Formation of numerals below ten

	1–7 separate terms	1–10 separate terms	8 contains 2	9 contains 1	6 contains 3	7 contains 3 or 4	8 contains 4	6 contained in 7 and/or 8	6 contains 1	7 contains 2	8 contains 3	9 contains 4	11–14 contain 1–4	15 separate term
Koyukon				x			x		x	x				
Inkilik				x			x		x	x				x
Ingalik									x	x	x	x	x	x
Tanaina-Kach. B.		x												
Tanaina-Kenai P.		x												
Tanaina-Susitna R.		x												
Ahtena		x												
Kotcha-Kutchin					x		x	?		x				
Vunta-Kutchin					?		x	x		x	x*			
Tukhudh-Kutchin					x		x	?		x				
Tanana					x		x							
Hare				x	x		x	x						
Dogrib				x	x	x	x							
Chipewyan				x	x	x	x							
Beaver					x	?	x							
Slave				x	x	x	x							
Sekani					x	x	x							
Carrier				x	x	x	x							
Chilcotin R.					x		?							
Nacoontloon-Chil.			x	x	x									
Kaska									x	x	x	x		
Tahltan									x	x	x	x		
Tse'tsaut									x	x	x	x		
Sarsi	x			x			x							
Clatskanie-Kwal.	x†			x										
Chasta Costa	x		x	x										
Coquille	x		x	x										
Upper Umpqua	x		x	x										
Tolowa	x		?	x										
Hupa		x												
Nongatl									x	x	x	x		
Sinkyone										x	x	x		
Mattole		x												
Kato									x	x	x	x		
Navaho		x												
Jicarilla		x												
Arivaipa		x												
White Mt.		x												
San Carlos		x												
Mescalero		x												

* Alternate term.
† Eight also separate term.

* Alternate term.
† Eight also separate term.

CHART II—Types of systems below ten, and formation of numerals above ten

	Below ten:						Decimal above ten with:								
	Decimal	Decimal-pairing	Decimal-subtractive	Quinary	Quinary-pairing	Pairing	teens containing ten	ty's containing ten	teens not cont. ten	ty's not cont. ten	100 containing ten	100 separate term	20 separate term	Vigesimal above ten	100 contains 5 and/or 20
Koyukon					x										
Inkilik					x									x	
Ingalik				x										x	x
Tanaina-Kach B	x							x	x				x		
Tanaina-Kenai P	x						x*		x*			x	x		
Tanaina-Susitna R	x							x	x			x			
Ahtena	x							x				x			
Kutchin					x		x*	x	x		x*	x*			
Tanana						x									
Hare						x	x	x			x				
Dogrib						x		x							
Chipewyan						x	x*	x	x		x				
Beaver						x			x	x		x			
Slave						x	x	x			x				
Sekani						x									
Carrier						x	x	x			x				
Chilcotin R.						?		x							
Nancoontloon						x	x			x		x			
Kaska				x			x	x			x				
Tahltan				x			x	x					x		x
Tse'tsaut				x			x	x							
Sarsi		x							x	x	x				
Clatsk-Kwal			?					x			x				
Chasta Costa			x												
Coquille			x				x	x				x			
Upper Umpqua			x						x	?		x			
Tolowa			x				x*	x	x*			x			
Hupa	x						x	x				x			
Nongatl				x				x	x						
Sinkyone				x			x			x		x			
Mattole	x						x	x*			x*			x*	x*
Kato				x†				x							
Navaho	x								x	x	x				
Jicarilla	x								x	x	x				
Arivaipa	x								x	x	x				
White Mt.	x								x	x	x				
San Carlos	x								x	x	x				
Mescalero	x								x	x		x			

* Appears in only one list or in alternate term.
† Quinary from 11–19 also.

The other most common structural type is the pure decimal, represented by all the Southern Athapaskan languages, by Tanaina and Ahtena in southern Alaska, by Nacoontloon Chilcotin in southern British Columbia, and by two languages on the Pacific Coast. In combination with the pairing type it is found in the most southerly of the northern languages—Sarsi; in combination with the subtractive type it is found in half the Pacific Coast languages.

The quinary type is found in three geographically limited areas:

1) the Ingalik area in northwestern Alaska, where Ingalik has a pure quinary system, while Inkilik, Koyukon and the three Kutchin dialects have mixed quinary-pairing;

2) the Tahltan, Kaska, and Tsetsaut;

3) Sinkyone, Nongatl, and Kato in northwestern California.

In all three areas the quinary system is probably the result of stimulus diffusion. The northernmost group may well have received it from Eskimo neighbors, most of whom have quinary-vigesimal systems, with whom they were in close contact.[6] (Birket-Smith states that the Kaiyukhotana (Inkilik) have been almost totally Eskimoized, except for their language).[7]

Among the Tahltan, Kaska and Tsetsaut, there is strong possibility of stimulus diffusion from neighboring Northwest Coast groups. Tlingit has a standard quinary structure below 10, 20 as a separate term, and decimal above 20. The similarity between this and the systems of three languages considered here is striking. Birket-Smith characterizes the Tahltan as "a well nigh North Pacific tribe."[8] Of interest here also is the fact that all three groups seem to have adopted matrilineal descent by diffusion from the coast.[9] Their close cultural ties are further reflected in such facts as that all share an innovation in the Dog-Husband tale unique to them.[10]

The quinary systems found in California Athapaskan languages are also probably a result of contact with neighboring tribes. Dixon and Kroeber suggest the Pomo and Yuki as sources for the Kato system.

One further structural type for the numerals from 1 to 10 is found in a limited area in Oregon. This is the type which has been termed 'subtractive.' In Athapaskan it is found in 8 and 9 in Upper Umpqua, Chasta Costa and Coquille, and in 9 in Clatskanie-Kwalhioqua and Tolowa. Now in the numeral systems of the neighboring languages Miluk Coos and Kalapuya (of the postulated Penutian super-stock), all the terms from 6 to 9 are subtractive, i.e., 6 contains 4, 7 contains 3, 8 contains 2 and 9 contains 1. The conception of 9 as one less than ten, or as approaching ten, is a frequent Athapaskan feature, occurring in systems with pairing terms for 6 and 8. Often, however, its meaning seems to have been descriptive of the position of the fingers in counting—"one bent down", etc. In Chasta Costa, on the other hand, Sapir translates 8 and 9 as "it lacks 2" and "it lacks 1",[11] and this "it lacks" element is cognate throughout the five languages of subtractive type; these languages, as noted, are in a limited area in Oregon. The other systems in which 9 contains 1 never have 8 containing 2, and are widely separated geographically from the Oregon languages. These facts imply distinct origins for these similarly structured kinds of term for 9.

It cannot be determined at present

[6] Many Eskimo quinary systems are of the type found in Vunta-Kutchin, i.e., 1–6 separate terms, and 7–9 formed as 6 + 2, 6 + 3, 6 + 4. (In some cases 9 contains 10 and another morpheme.) The Mackenzie Eskimo and other Eskimo groups with this system border Kutchin territory, so that the Vunta Kutchin pattern may be due to them.

[7] K. Birket-Smith, Cultural Position of Chipewyan Within Circumpolar Culture Region, ICA 24.97–111, p. 109.

[8] Idem.

[9] H. E. Driver, Economy, Residence and Descent in Aboriginal North America, Mss.

[10] D. H. Hymes, The Dog-Husband Tale, Mss.

[11] E. Sapir, Notes on Chasta Costa Phonology and Morphology, UPMAP II.273–340, p. 296.

whether the Oregon Athapaskans obtained the subtractive structure from Penutian languages or the reverse. There is insufficient information about the cultural inter-relationships of the groups and the internal linguistic relations of either Pacific Coast Athapaskan or Penutian. One can note that Miluk Coos (Penutian) shares with Upper Umpqua (Athapaskan) a special suffix used with numerals when referring to humans; the forms are not the same, and Frachtenberg suggests stimulus diffusion from Upper Umpqua to Miluk Coos, which may have adapted an existing form for "people".[12] Jacobs reports that Bluejay in Miluk Coos folklore spoke in Athapaskan,[13] and the Chasta Costa term for "robin" is likely a borrowing from adjacent Takelma of a Penutian stem found also in Upper Chinook. But these data are fragments of a total picture. At any rate the feature is an areal one, and since it is not found in other Athapaskan languages, it presumably has developed after migration into Oregon.

1.3. Decimal systems are found along the coast in southern Alaska and in Oregon and California, in a large, culturally homogeneous area in the southwestern United States, and in the most southerly and central northern Athapaskan language, Sarsi, combined with pairing. Evidence for common origin of all these decimal or partly decimal systems can be found in the term for 6, which is cognate in all of them. (See Tanaina, Ahtena, Sarsi, Kwalhioqua-Clatskanie, Upper Umpqua, Tolowa, Chasta Costa, Hupa, Mattole, Sinkyone, Navaho, Arivaipa, White Mt. Apache, San Carlos, and Jicarilla in sections 2, 3 and 4.) Put otherwise, all languages with unanalyzable terms for 6 (except the clearly non-decimal Vunta-Kuchin) have terms which are cognate. This is strong evidence for an original decimal system with pairing in the case of Sarsi and quinary modifications in other cases having been later acquisitions.

[12] Frachtenberg, p. 146.

[13] M. Jacobs, Coos Myth Texts, UWPA 8.

1.4. Above 10, almost all Athapaskan languages are decimal. This does not, however, validate statements such as that of Dixon and Kroeber that "consistent and thorough decimal systems where all the numerals both BELOW and ABOVE ten are on this basis, cover very large areas, including the regions occupied by the large or important Siouan, Athapaskan, Shoshonean, Iroquoian, and Salish stocks."[14] [Emphasis added]. Chart II shows the exceptions to this statement for Athapaskan.

Purely vigesimal systems are found, however, only in Ingalik and Inkilik, and, as an alternate system, in Mattole. The merest suggestion of vigesimal systems is found in languages which are decimal above 20, but have a separate term for 20; these are Kachemak Bay and Kenai Peninsula dialects of Tanaina, and Tahltan.

For individual features of formation of numerals above ten (see Chart II), the following patterns of distribution appear:

1) the large majority of systems have 10 contained in the "-ty" terms. Only ten languages do not; of these, eight also do not have 10 contained in the "-teen" terms (Southern Athapaskan (6 languages), Beaver, and Sarsi). In these eight the "-ty" element is cognate, and the "-teen" element is cognate in these and Upper Umpqua, Tolowa, Coquille of the Oregon group, plus possibly Carrier. Now the Sarsi are generally considered to have been part of the Beaver tribe before migration to the Plains, which is borne out by their numeral systems; but more important, the numeral systems indicate a special historical relationship between Beaver, Sarsi, and Southern Athapaskan tribes, and, to a lesser extent, the Oregon Athapaskan tribes, when one considers together the patterning of terms above 10, and the cognates for 6, "-teen," and "-ty."

2) Almost all the northern languages for

[14] R. Dixon and A. Kroeber, Numerical Systems of the Languages of California, AA 9.663–90, p. 672, (1907).

which the information is available have "-ty" the same morpheme as 10. Besides Beaver and Sarsi, the only exceptions are the vigesimal systems and one dialect of Chilcotin. Even Tanaina, which follows the Southern Athapaskans in "-teen" not containing 10, is "northern" in this trait.

1.5. Since Athapaskan languages are spoken by groups of considerable cultural diversity, it is possible to correlate the structural patterns of the numeral systems with culture areas. All but three of the groups of the pairing type are located in Osgood's Arctic drainage culture area.[15] The exceptions are Tanana, Carrier and Chilcotin. The latter two are adjacent to groups with pairing structure, while Tanana is separated from such groups by Kutchin, which has a mixed quinary-pairing system. (Kutchin's quinary element is almost certainly borrowed from Eskimo neighbors.) Koyukon has also a mixed quinary-pairing system. Thus the pairing structure, pure or mixed, has a continuous distribution in northwestern North America, largely in one culture area.[16]

Only one group in Osgood's Arctic Drainage area lacks the pairing feature. Kaska, together with Tahltan and Tsetsaut, forms a continuous and culturally homogeneous area in British Columbia; Kaska, like the other two, has a pure quinary numeral system below 10. Indeed, in view of the cultural affinity of Kaska to these two groups and the Northwest Coast, its inclusion in the Arctic Drainage area is probably arbitrary.

The only northern decimal systems below 10 (Tanaina, Ahtena) are in the Pacific Drainage culture area. In the same area are found three pairing systems (Carrier, Chilcotin, Tanana), three quinary systems (Ingalik, Tahltan, Tsetsaut), two pairing-quinary (Koyukon, Kutchin), and four large groups for which no information could be obtained (Han, Nabesna, Tutchone, Nicola). This is the only culture area which has no positive correlation with one type of numeral system.

All the Pacific Coast quinary systems are in Kroeber's California-Northwest Coast transition area; all the Pacific Coast decimal or decimal-subtractive systems (except Mattole) are in Kroeber's Lower Klamath sub-area of the Northwest Coast.[17] As noted, the Southern Athapaskan (Apachean) groups are homogeneous culturally and linguistically in general, as well as in the structuring of the numeral systems.

1.6. A final classification of the Athapaskan numeral systems based on the total structure for each language is as follows (features below 10 are given before /, features above 10 after /, except that for pure quinary systems the term following / refers to the structure above 20):

I. *Decimal.*
   a) Decimal/decimal (Tanaina, Ahtena, Mattole, Apachean).
   b) Decimal-pairing/decimal (Sarsi).
   c) Decimal - subtractive / decimal (Clatskanie, Upper Umpqua, Coquille, Tolowa).

II. *Pairing.*
   a) Pairing/decimal (Hare, Dogrib, Chipewyan, Beaver, Slave, Carrier).
   b) Pairing - quinary / decimal (Kutchin). (See **1.1**)

III. *Quinary.*
   a) Quinary/decimal: Tahltan, Kaska, Tsetsaut, Nongatl, Sinkyone, Kato.
   b) Quinary/vigesimal: Ingalik.
   c) Quinary-pairing/vigesimal: Inkilik.

In this classification types I and II are presumably of genetic origin, while type III (and the quinary element in IIb) is probably

[15] C. Osgood, The Distribution of the Northern Athapaskans, YUPA 7.1–23 (1936).

[16] E. Sapir, Central and North American Languages, Encyclopedia Britannica, 14th ed., 5.138–141 (1929).

[17] A. L. Kroeber, Cultural and Natural Areas of Native North America, UCPAAE 38, Table 18 (1939).

the result of diffusion. It can be seen that type I appears in all three geographic areas, being the exclusive type in the south. Type II appears only in the north, being the exclusive type in one large central area. IIIa is found in western British Columbia and northern California, while IIIb and IIIc are in far northwestern Alaska.

In geographical extent and number of languages, types I and II are dominant. The Italian school of areal linguistics might well conclude that the decimal type (I) is the earlier of the two and the original Athapaskan system. Further evidence is needed, however, to determine the exact factors that account for each system as it now exists in each language. Particularly the working out of the phonological correspondences in Athapaskan would make a more precise formulation possible. The investigation of other lexical materials might reveal forms related to numeral morphemes, whose analysis and translation would clarify the pairing and subtractive systems especially. Another question concerning the original Athapaskan system is the possibility that the pairing type is due to influence from neighboring languages such as those of the Siouan or Algonquian families. The pairing system is found among the Labrador Eskimo; its presence or absence in the area between Labrador and the northern Athapaskans remains to be investigated.

2.0. Northern Athapaskan Numeral Systems. The numeral systems appear in the original and secondary sources in a bewildering variety of designations. In assigning them tribal names, the terminology of Osgood[18] has been used, once the actual location of the group had been ascertained with the aid of Pilling's Bibliography, Osgood, and information in original sources. For many languages more than one list of numerals has been available. Since many of the lists are by travellers, missionaries and traders, extending back to the early nineteenth century in date, the phonetic notations are often inadequate, and only a comparison of several sources for a system sometimes has made satisfactory analysis possible. So that the basis for analysis may be clear, in such cases more than one of the available lists is reproduced here.

The chief secondary source for all the Athapaskan numerals has been Kluge's vast collection of non-European systems.[19] All lists which appear in Kluge are footnoted with *K.* and a number, indicating the page and the number assigned by Kluge to the list; the original source, which has been examined whenever available, is also given.

2.1. Koyukon. Four lists of numerals are available for this group. One, collected by Whymper,[20] is from the drainage of the Koyukuk River, the others, taken from Dall,[21] are for dialects spoken at Ululuk River, Kaiyuh River, and the mouth of the Tanana River. Forms cited below are given in that order, followed by analysis.

one: ketleket, kaythlukéh, kaythlukeh, kaythluket. *two*: unte, ntáykeh, n'táykneeh, n'táyuhkeh. *three*: taunke, tokah, tókhneh, tonkáh. *four*: tinike, tenikeh, tenikhneh, tinkée. *five*: ketsmala, ketudnála, kétsinala, ketudsinala (ket may be related to *one*).

six: ———,[22] tenankáytluka, tonankaythuket, tonankaythluket (unanalyzed element plus *one*).

seven: ———, tonanotáykeh, tonanotáykeh, tonanotayukeh (same unanalyzable element plus *two*).

eight: ———, niltadinkeh, tl'ka'dnkay,

[18] Osgood, 20–21.

[19] Th. Kluge, Die Zahlenbegriffe der Völker Amerikas, Nordeurasiens der Munda und der Palaioafricaner, Berlin (1939). I am indebted to C. F. Voegelin for making available to me one of the hundred existing copies of Kluge's work.

[20] F. Whymper, Travels and Adventures in the Territory of Alaska, London (1868), p. 344; K. 380, #1.

[21] William Dall, Alaska and Its Resources, Boston (1870), pp. 550–51; K. 384, #13.

[22] Whymper gives no terms for 6–9, but cites them as *five one, five two, five three, five four.*

nihkádinkeh (second element, -dinkeh, may be alternate of *four*).

nine: kaytlukukulyeh, nikoználakáythlukehkúlla, kaythluketkúlyeh ((*ten*) plus *one* plus unanalyzed element kulyeh which may mean *less than*).

ten: nekoshnala, nikognalah, nikaznarlta, neekoznála.

These almost identical systems have separate terms for *one* to *five* with *six* and *seven* quinary and *eight* and *nine* pairing. Whymper's list diverges for *eight* and *nine* if his analysis was correct. Terms above *ten* are not available.

2.2. Ingalik. For Ingalik a modern list collected by Osgood[23] and two almost identical lists of Zagoskin[24] from mid-nineteenth century are available. The Zagoskin lists were collected among what he called the "true Inkilik" Athapaskans living on the Yukon River from about 63 to 64 degrees north latitude. Osgood classes them as a subdivision of the Koyukon, but they are included here to facilitate their comparison with Ingalik, of which they are the nearest northern neighbor. The first numeral of two cited will be Ingalik, as will all single forms.

one: giłaga, kisleka; *two*: teka, inteca; *three*: to:g, toca; *four*: de:nče, tenki; *five*: giłasna:l, kitschnalaa; *six*: dong:agełaga; tonankelke (unanalyzed element plus *one*); *seven*: dong:atełaga, tonanteka (same element plus *two*, or variant of it); *eight*: dong:ato:go (same element plus *three*), nyngantenke (unanalyzed element plus *four*); *nine*: dong:ade:nče (same element plus *four*), inkojnaltoljakylkalja (*ten* plus tolja plus variant of *one*).

ten: niłk'osnal, inkojnalja; *eleven* through *fourteen*: *ten* plus *one*-through-*four* plus wak'aži, e.g. niłk'osnal-to:gowak'aži *thirteen*.

fifteen: denxak'ul, tynakakalji; *sixteen* through *nineteen*: denxak'ul plus *one*-through *four* plus wak'aži; e.g., denxak'ul-to:gowak'aži *eighteen*.

twenty: giłagadena, kelkoutuje (*one* plus -dena; *one* plus unanalyzed element); *thirty*: giłagadena-niłk'osnalwak'aži (*twenty* plus *ten*); *forty*: no:tendena, inteltschuguje (variants of *two* plus element for *twenty*?); *fifty*: no:tendena-niłkosnalwak'aži (*forty* plus *ten*); *sixty*: toxendena (variant of *three* plus *twenty*);

hundred: giłasna:ldena (*five* plus element for *twenty*); *two hundred*: niłk'osnaldena) (*ten* -*twenty*).

The Inkilik system may be characterized as quinary through seven, with terms for eight and nine of pairing type. Thus far it corresponds to Koyukon. The separate term for fifteen (possibly cognate with the Ingalik term) and the lack of any ten element in the terms for twenty and forty, suggest the presence of a quinary vigesimal system above ten. The evidence is however inconclusive. Not so for Ingalik which has a quinary system up to twenty and is clearly vigesimal in the higher numbers. Previous writers have stated that all Athapaskan numeral systems are decimal above ten. A possible explanation for the existence of the unusual quinary-vigesimal system in Ingalik, and the trace of one in Inkilik, is their close contact with Eskimo groups. The group studied by Osgood (Anvik-Shageluk) is said by him to have had especially close contacts with Eskimos. Examination of many Eskimo numeral systems has shown quinary-vigesimal systems as common.

2.3. Tanaina. The geographic position of the Tanaina in South Central Alaska affords easy opportunity for contact with the Ingalik on the part of the Western Tanaina, and with Eskimos on that of the Kachemak Bay, Iliamna and Kenai groups. Six numeral systems are available for the Kenai of the upper Kenai peninsula, one for the Tanaina of Susitna River and one for those of Kachemak Bay. All except Osgood's[25] recent

[23] C. Osgood, Ingalik Material Culture, YUPA 13.470 (1940).

[24] L. Zagoskin, A Pedestrian Exploration of Parts of Russian Possessions in America, St. Petersburg (1847), Appendix p. 20; K. 380, #2, 3.

[25] C. Osgood, Ethnography of the Tanaina, YUPA 16.215 (1937).

Kachemak Bay list were collected by 19th century Russians. The numerals will be cited in the order: Kenai Gulf, collected by Wrangell,[26] Susitna R.[27] and Kachemak Bay collected by Osgood. When terms in one of the other available Kenai lists differ from Wrangell's significantly, they will be cited in parentheses, and D (Dawydow), R (Resanow) and L (Lisiansky) will indicate their source.[28]

one: č'ilki (tseelgtan, L), ilite, čłλi; *two*: techa (nootna, L), lakeji, nodiɣai; *three*: tugi, takei, togex; *four*: tinki, tani, taŋgéh; *five*: tskiln or tschkimo (zieljalo, D), taljtschani, čigílo; *six*: kus'jini, kisstani, čogini or košlne; *seven*: kintschougoni (kanzeogi, D; kanzau-e, R; kants-ehé, L), kontschagi, konceɣóie; *eight*: l'takouli, tany, łtagole; *nine*: lgitschitchou or kytschitu (lehezetche, D), takoleí (cf. *eight*), łeče:do; *ten*: klju'jun, natitlja, λožon.

Separate terms for all numerals up to ten is characteristic of all these lists. Susitna River terms are extremely divergent, but, except for the term for *two*, Osgood's Kachemak Bay terms are all probably cognate with the Russians' Kenai terms.

eleven: (zelkoikty, D; kljushun-zylke, R), ————, ce:łewek'adi; *twelve*: (tychaokty, D; kljushun-techa, R), ————, nodiɣawek'adi. (cf. wek'adi with Ingalik wak'aži in terms from eleven to nineteen).

Here, three lists give three different ways of handling terms for eleven and twelve. The term for ten appears only in Resanow's list, as a "teen" element.

twenty: zyljketna, (zeliotna, D; tsihhatna, L), natchotetly, ciłatna (all except Susitna R. are of form *one* plus atna); *thirty*: ———, tachtonatetly, tot'ahλož′ on; (both of form *three* plus element for *ten*). Kachemak *forty* and *fifty* are: tenešλožon and čkeloλožon; i.e. *four* and *five* plus *ten*.

hundred: tgasstlynj, injinilin, ɣadáslin (all uncompounded terms, and the first and last cognate).

2.4. Ahtena. Ahtena groups, occupying the drainage of the Copper River in South Central Alaska, are divided by Osgood into the Midnoosky, below Tazlina River, and the Tatlatan above it. Numerals are available for the former; two lists collected by Wrangell early in the 19th century and one list (from 1–10) by H. T. Allen in 1886.[29] Wrangell's two are almost identical and the longer is given here, preceding Allen's in citation.

one: štšelkai, suskai; *two*: nateakcha, naytáyky; *three*: taaki, tágy; *four*: tijinki or tinnki, dinky; *five*: alcheni, ahtzunny; *six*: kastaany, kistán; *seven*: konzegai, konsarry; *eight*: t'kladenki, klahinky; *nine*: tklakolei, zutlakwalo.

ten: pl'aja, lahzún; *twenty*: natom-pl'aja; *thirty*: taadom-pl'aja; *hundred*: trejek.

These systems seem to have separate terms from 1–10. No terms from 11–19 are available. The "ty" element of *twenty* and *thirty* is the same as *ten*. *One hundred* is a separate term.

Comparing these numerals with those for Tanaina we find that 3, 4, 5, 6, 7 are probably cognate. Wrangell's Ahtena *nine* is cognate with Susitna *nine* and thus with most of the terms for *eight* the other Tanaina lists.

2.5. Kutchin. Numeral systems were available for three Kutchin dialects: Kotcha-Kutchin (two lists differing considerably, and collected by Kennicott[30] and Alexander

[26] Dall, p. 550; K. 385, ✱20.

[27] J. C. E. Buschmann, Der Athapaskische Sprachstamme, Königliche Akademia der Wissenschaft zu Berlin, Abhandlung 1855, pp. 144–319 (Berlin, 1856), p. 279. K. 381, ✱6.

[28] Dawydow's list, collected in 1810, appears in Buschmann, p. 233; K. 380, ✱4. Risanow's is in the same source and is K. 380–81, ✱4, 5; likewise Lisiansky's, K. 381, ✱4.

[29] Dall, p. 550, K. 383, ✱9; Buschmann, p. 279, K. 383, ✱9; and H. T. Allen, Atnatana; Natives of Copper River, Alaska, Smithsonian Institution Annual Report for 1886, Pt. 1.258–266 (1889), p. 265; K. 383, ✱11.

[30] Robert Kennicott, Kotcha Kutchins, Vocabulary from the language of the Indians of the Yukon River . . ., Smithsonian Institution (1869); also in Whymper, p. 350; K. 387, ✱25.

Murray, a Hudson's Bay company trader[31]), Tukhudh-Kutchin, collected by a missionary, Robert MacDonald,[32] and Vunta-Kutchin, collected by Petitot.[33] They are cited in that order.

one: chih'thluk, tihlagga, ihthlug (or chithlog), inl'èg; *two*: ne'kain^n, nakhei, nekthui, nakren; *three*: ti'ik, thieka, nekthui un ithlog (simple form probably existed), t'iĕg; *four*: tang, tanna, ttankthut, tan (or tankrè); *five*: chithlukanli, illakonelei, ifthlokwunlih, inl'adhgwenlĺè (all probably contain *one* as a first element); *six*: nihkiti'ik, neckhkiethei, nikkittyigg, ettsétèdji (the first three are clearly *two-three*, and the Vunta term possibly contains a variant of *three* as its second element); *seven*: e'tsede'tse nekain^n,ataitsanewkhe, chitsuttetsinekthui, ettsĕtèdji nakren (all seem to contain some variant of the Vunta *six* plus *two*); *eight*: nihkitang', nakheietanna, nikkithankthut, ettsétèdji t'ièg or nikkie tankre (Vunta continues the pattern of *six* plus *three* but has an alternate term identical with the others which are clearly *twice four*); *nine*: menchudhnekonkwa, nuntchaniko, vunchut-nukozukdhityin, voentchradt zjègoedhitin (unanalyzed).

ten: chitluk'chotíin tikhlaggachowethien, ihthlogchotyin, inl'ag djootin (all contain terms for *one* and all elements for *ten* are cognate).

eleven: chithlukvidatuk, tikhlagg mikkitagga, ————, inl'ag djootin kidé t'ag inl'ag (only Vunta term contains *ten*); *twelve* formed similarly.

twenty: nekain^n chotiin, nakhowchowothien, nekthogchotyin, nakren djootin (all contain term for *ten* as "ty" element). Formation of higher numerals is regular, and *hundred* is in all lists *ten-ten*; e.g., Kotcha-Kutchin of Murray: *hundred* tikhlaggachowethienchowethien.

Below *ten* in these systems we see a blending of two different systems: pairing, and a special type of quinary system found in some Eskimo dialects and Siuslaw. In this system the term for *six* forms the base for addition of *two*, *three* and *four* to form *seven*, *eight* and *nine*. Vunta has this system full-blown, while the other dialects have a trace of it in their terms for *seven*. But Vunta also shows a trace of the pairing system in its alternate term for *eight*.

Above *ten*, the systems are all completely decimal. The "teen" element of the Kotcha-Kutchin lists is not the same as *ten*, whereas in Vunta and Tukhudh it is.

2.6. Tanana. The Tanana, called Tenan-Kutchin by Dall, who collected the only numerals available for this group, occupied the confluence of the Tanana and Yukon Rivers, and the Yukon above the confluence. The numerals were collected by Dall[34] at Fort Yukon in mid-19th century.

one: chetlukeh; *two*: nahkehtih; *three*: taguh; *four*: tingah; *five*: ketudsinala; *six*: niketagah (twice three); *seven*: taytsuntseh; *eight*: neketungkeh (twice four); *nine*: mintsuhtl; *ten*: chilodeltah.

This system is of the pairing type in its terms for *six* and *eight*. Contact with Kutchin groups may be reflected in this as well as in the terms for *one* and *two*. Note that the term for *five*, however, is cognate with all the Koyukon terms for *five*.

2.7. Hare. The Hare consist of various bands living Northwest of Great Bear Lake, a section of the lower Mackenzie River, and its drainage. The numerals available were collected by Petitot.[35]

one: inl'age; *two*: onk'e/nak'e; *three*: t'age; *four*: dinyi; *five*: lla-kkè susinla (variant of *one* plus new element); *six*: ettsen-t'agé (unanalyzed element plus *three*, cf. Vunta Kutchin); *seven*: ettsen-t'agéedak-kwè (*six* plus unanalyzed element); *eight*:

[31] Alexander Murray, A Journal of the Yukon in 1848, Publ. of Canadian Archives 4, Ottawa (1910), p. 90; K. 388, #28.

[32] Robert McDonald, Grammar of the Tukhudh Language, London (1911), p. 83; K. 387, #27.

[33] E. Petitot, Dictionnaire de la langue Déné Dindjié. Paris and San Francisco (1876); K. 387, #26.

[34] Dall, pp. 550–51; K. 387, #24.

[35] Petitot; K. 389, #38.

ettsen-dinyi (same formation as *six*); *nine*: l'é-ye-fwét'on inl'agé ulle (contains *one*; also, -ulle is similar to final element of Koyukon *nine*); *ten*: korennon; *eleven*: korennon towettsen inl'age; *twenty*: onk'-edetté korennon; *hundred*: korennon orennon.

Compounding below *ten* is of the pairing type. The term for *ten* appears in "teens" and in higher decades, including *one hundred*.

2.8. Dogrib. The Dogrib occupied the area between Great Slave and Great Bear Lakes. Four lists are available and are cited in the following order: list collected by Sir John Le Froy in 1844 from Nanneth, an interpreter at Ft. Simpson;[36] list collected by Sir John Richardson at Fort Confidence about the same time;[37] two lists collected by O'Brian, a member of the Hudson's Bay Company prior to 1850, the first among the Dogrib of the River of the Mountain, and the second at Ft. Simpson.[38] Analysis, in this case follows the complete listing.

one: enclai, 'nthlaré, thelgai, thlie; *two*: nàkka, nakhkè, olkie, olkie; *three*: tharga, khtane, tadette, tie; *four*: thing, 'tinge, tinghi, tinghè; *five*: sasoola, zazunlarrè, sazelli, sazelli; *six*: utket tai, elkatharrè, atseuti, etseuti; *seven*: kkosing ting, nthlazintinge, thlazadie, handie; *eight*: etzenting, alkatingè, etzandie, etzandie; *nine*: kkahooli, 'nthlaotta, etthleihulai, ethliehoulai; *ten*: honanna, 'nthlauna, kennatai, onaiunon; *twenty*: nounanna, ———, ———, ———.

Analysis of the compounding in these numerals is aided by comparison of all four lists. In all of them, *six* may possibly be a compound containing *three*. This analysis is supported by the fact that the initial morphemes of *six* and *eight* are similar and that *eight* clearly contains *four* as a second element in the first and second lists. *Seven* also seems to contain *four* in these two lists. In Richardson's list the first element of *seven*, nthlazintinge, is similar to *one* and *seven* may have some meaning such as *one side four*. There is in summary at least a strong indication of these numerals being of the pairing type and no indication of their being quinary. The only word above *ten* which is available indicates a decimal system, with *ten* serving as the "ty" element.

2.9. Chipewyan. Eight lists of numerals are available of which four are reproduced here,[39] one from about 1800 collected by MacKenzie,[40] one from about 1850 by M'lean,[41] one from 1876 by Petitot,[42] and a recent one of Li.[43] Where Goddard's list of 1912 differs in structure of a term it is cited, following the Petitot term in parentheses and with initial G.

one: ethliah, ittlahe, inl'agé, ʔiłáɣe; *two*: nukkur, nankkay, nak'e, náke; *three*: torri, tahe, t'ag'é, taɣe; *four*: dinghe, dunkhe, ding'i, dįɣį; *five*: sosulihe, sasootlahe, sésunlag'e, sasuláɣɛ.

six: elkathari, l'goothahe, elkkèt'ag'e, ʔałk'étaɣɛ (all containing same first element and *three* as second element); *seven*: olusingdinghe, tluzuddunkhe, tayeoyertan (G: tauewatā), ʔiłásidįɣį (all except Petitot and Goddard terms contain *four*, and those two contain *three*. Li's also contains *one* and the meaning may be *one side four* referring to count on the fingers as most of the pairing terms in Athapaskan may originally have done). *eight*: elketdinghe, l'gootdunghe, elkk'eding'i, ʔałk'édįɣį (all forms parallel to those for *six*); *nine*: kutchehonerre, itlaudha, inl'ayé oyertan, ʔiłaɣɛyaɣaútą. Mackenzie's

[36] John Richardson, Arctic Searching Expedition, London (1851), p. 400–2; K. 388, #30.

[37] Idem.

[38] Ibid., p. 399–400, K. 388, #31; p. 398, K. 388, #33.

[39] Not cited here are K. 390, #40 = #46; K. 391, #41; K. 391, #43; and K. 392, #48.

[40] Edwin James, A Narrative of the Captivity and Adventures of John Tanner, New York (1830), p. 332.

[41] John McLean, Notes of a 25 Years service in the Hudson's Bay Territory, London (1849), pp. 323–8; K. 390, #39.

[42] Petitot, K. 389, #37 = #36.

[43] F. K. Li, Chipewyan Structure, LSNA, (1946), p. 423.

term contains *ten* as second element, all the rest have *one* as first element. The second elements of Petitot's and Li's terms are probably cognate, and may have some such meaning as *remaining* or *bent down*. This throws new light on Petitot's (and Goddard's) *seven* which must then be *three remaining* or *bent down*. Goddard's *nine* may be the same as Petitot's and Li's iLāxotā.

ten: honernenuh, hona, onernan, ʔiłáunéną. *eleven*: ———, itla jaidel, onernaninl'agéttchag'idhel, ʔiłáγɛʔɛt'cadsel (all of form *one* plus an element probably cognate in all, with *ten* preceding all this in Petitot's term).

Twenty, *thirty* etc. are decimal of form *two-ten* etc., e.g., Li's náuneną ta: uneną. *One hundred* is *ten-ten* as in Petitot's onernan onernan. Goddard lists the only term for *a thousand* and it is French mĭl.

These systems may be characterized as of pairing type, decimal above *ten*, with *ten* appearing as "teen" and "ty" elements.

2.10. Beaver. Three mid-19th century and one fairly recent list are available. The earlier lists in this case are so hidden under cumbersome orthography that almost no pattern emerges, and we thus limit ourselves to mentioning their existence.[44] Goddard's[45] list is reproduced here.

one: łłatc'e, *two*: ōñkitc'e, *three*: tatc'e, *four*: dĭyetc'e, *five*: łatc'edĭ, *six*: etc'ịtatc'e (unanalyzed element plus *three*; cf. etc'ị with Hare ettsen in terms for *six*, *seven* and *eight*), *seven*: tayūdjī (may contain *three*); *eight*: etc'itdịtc'e (same pattern as *six*); *nine*: k'allûkk'itc'e; *ten*: k'initc'i; *eleven*: iładịmata (contains *one* plus unanalyzed element, mata).

twenty: ōñkīk'edị ("ty" element is not ten).

hundred: k'iwenedeketc'i. *thousand*: k'ĭnetc'e tcok; translated by Goddard as *big ten*.

Because of its formation of *six* and *eight* this system can possibly be classified as pairing. Above *ten* it is decimal with the term for *ten* not appearing as either "teen" or "ty".

2.11. Slave. The only numerals available for Slave were collected among the Fort Nelson Slave by Honigmann.[46] These correspond exactly to a list collected a few years ago by Theresa Cartaret. Honigmann's list is given here.

one: klie, *two*: oki, *three*: taj, *four*: di, *five*: ilagi, *six*: etzɛntaj (etzɛn plus *three*; cf. Hare and Beaver); *seven*: klatdí (contains four?); *eight*: etzɛndi (same pattern as *six*); *nine*: k'luli (*one* tuli).

ten: hənənə, *eleven*: hənəklie, *twelve*: hənnki, *thirteen*: hənətaj, etc.

twenty: o:köno; *thirty*: tano, *forty*: dəhənəno, *fifty*: ilajgiyənəno, etc.

hundred: klie la hənəno

Terms for *six* and *eight* are of pairing type and *nine* contains *one*. System is decimal above *ten* with the term for *ten* appearing as both "teen" and "ty" element. It is cognate with Dogrib and Chipewyan terms for *ten*.

2.12. Sekani. Only one numeral system, published by Howse in 1850[47] is available.

one: eaclyt'ye, *two*: ookeet'ye, *three*: taht'ye, *four*: teetutt'ye, *five*: clahtzoola mint'ye,: *six* eatzetatt'ye (eatze plus *three*); *seven*: ookeidingkee, *eight*: eatzeeteent'ye (eatze plus a variant of *four*); *nine*: kahlahkeut'ye (cognate with Beaver *nine*) *ten*: kaynent'ye.

Despite the notation, which almost obscures any resemblances to an Athapaskan numeral system, one can see that *six* and *eight* are of the pairing type, and that all the terms except *five* and *seven* are probably closely similar to Beaver. This is as expected, on the basis of Sapir's placing of the two languages in the same internal grouping.

[44] K. 393, ⁂56, and K. 393, ⁂55 and ⁂55½.

[45] E. P. Goddard, Beaver Dialect, APAMNH X. 437 (1917).

[46] John Honigmann, Ethnography and Acculturation of the Fort Nelson Slave, YUPA 33 (1946), p. 157.

[47] Joseph Howse, Vocabularies of Certain North American Languages, Philological Society of London, Proc. 4.191–206, London (1850), pp. 191–3; K. 396, ⁂70.

2.13. Kaska. Numerals collected by Dawson[48] at the end of the last century are available for the Tetshotina group of the Kaska. Honingmann, writing in 1949, reports that modern Kaska have taken over western numerals.[49]

one: ethéga, *two*: hleketetá, *three*: tadida, *four*: hlen'ta, *five*: klola, *six*: nodsliga, *seven*: nodslika, *eight*: nostadida, *nine*: nosisleneta (*eight* and *nine*, which clearly contain nos plus the terms for *three* and *four*, suggest that *six* and *seven* are formed on the same quinary pattern).

ten: tiseno go anzi tligá; *eleven*: tiseno go anzi lakułctla (if the final element is *one*, the difference in form may be due to inconsistency in transcription).

twenty: ta tisno, *thirty*: tlentadesno, *forty*: klantadesno, *fifty*: hlooladesno, *sixty*: nosligitisno, *seventy*: nosaslakadisno, *eighty*: nodetadesnó, *ninety*: noslantadesno, *hundred*: tisnokinetá (these are all clearly decimal in formation with considerable phonetic variation, which may be due to faulty transcription. The term for *ten* appears as both "teen" and "ty" element. It also appears in *one hundred* followed by an unanalyzed element).

2.14. Tahltan. Tahltan, the language of the Kaska's nearest western neighbors, has been recognized as closely related to Kaska by Sapir, and following him, by Voegelin and Hoijer. This close relationship is clearly reflected in the numerals, both in the phonemic shapes of individual terms and in the structure of the system as a whole. The Tahltan numerals below were collected by Dawson[50] late in the last century.

one: tlīgeh', *two*: tlakēh, *three*: tāte, *four*: klenteh', *five*: klodlac, *six*: naslikė, *seven*: naslakeh', *eight*: nastāe, *nine*: nastentēh (*six*, *seven*, *eight* and *nine* contain nas plus variants of *one*, *two*, *three* and *four* respectively. The system is thus quinary below *ten*).

ten: tsosnā'ne; *eleven*; tsosnā'neteśliheh (*ten* plus *one*); *twelve*: odis lākēh (*two* following unknown element).

twenty: ten-tladihteh, *thirty*: tatsosnan (*three* plus *ten*).

Decades from *forty* to *ninety* follow same pattern. *One hundred* (klolatenaneta) seems to contain the term for *five* plus the initial morpheme of *twenty*.

Kaska and Tahltan numerals seem extremely divergent from other Athapaskan numerals. Unfortunately no other source than Dawson could be found for them, so that it is impossible to tell if their divergence is a result of his transcription or not.

2.15. Tsetsaut. The numerals below were collected by Boas[51] at the end of the last century.

one: ɛlic'; ɛlitsa'; ɛlɛ; ɛlɛ·', *two*: łéid'a, *three*: txa·adé, *four*: nt'onéi, *five*: ɛł'ada, *six*: ɛłtats'é; ɛlɛ·táat'atsxe, *seven*: łɛ·id'ɛ thałcé, *eight*: txa·txalie·'ə, *nine*: ɛliad'unɛɛ·' (at'onɛɛ'ɛ, *four*, used in counting.); *six*, *seven*, *eight* and *nine* seem to contain respectively *one*, *two*, *three* and *four*. The second element in all but *nine* is probably cognate, but is not related to the term for *five*. The system may be characterized as quinary.

ten: łɔ·kyada', *eleven*: łokyada'ɛlɛ·' (*ten* plus *one*); *twenty*: łit'ɛłɔ·gyadé, *thirty*: łxadɛlogy'adé (*two* and *three* plus the term for *ten*).

Tsetsaut then, like its near neighbors, Tahltan and Kaska, has a quinary-decimal system.

2.16. Chilcotin. Numerals for two dialects of Chilcotin, Chilcotin River, and Nacoontloon- are available, both collected by Dawson.[52] Chilcotin River forms are cited first, Nacoontloon second.

[48] George Dawson, Geological and Natural History Survey of Canada, AR n.s. 3, pt. 1, Report B, Montreal (1889), p. 212B; K. 401, ⁂85C.

[49] John Honigmann, Culture and Ethos of Kaska Society, YUPA 40 (1949), p. 213.

[50] Dawson, p. 212B, K. 401, ⁂85B.

[51] F. Boas and P. E. Goddard, Tsetsaut, IJAL 3.1-35, p. 32; K. 397, ⁂80.

[52] W. M. Tolmie and Geo. Dawson, Comparative Vocabularies of Indian Tribes of British

one: inlhi, itlah; *two*: nankuh, nanki; *three*: tai, tai; *four*: ti, tei; *five*: iskunla, skwnlai; *six*: utltshuntai, atltshantai (contains *three* as last element perhaps). *seven*: utltshuntaigutinlhi (*six* plus *one*), uttshatalte; *eight*: guinilti, naketlakul; *nine*: ———, entlah lakul (*eight* and *nine* in Nacoontloon seem to contain *two* and *one* respectively plus the element lakul which may have a meaning of "less than").

Above *ten* the picture is confused. Chilcotin has *ten*, itshilawnilnan, and the decades are formed in the ordinary decimal pattern, e.g. *thirty* tatittshilawnilnan. Naconntloon *ten* however is listed as exactly the same form as *six* (atlshantai) and the teens are formed regularly with it as a base, e.g. *twelve*: atltshantainanki. But then, *twenty*: nanki mot ezzi, and *thirty*: take nan ezzi, introduce a new element. *One hundred* is itli atshanta', and *one thousand* is this term preceded by lanezze which is cognate with some other Athapaskan words for *ten* (cf. Carrier).

2.17. Carrier. For Carrier four lists are available, collected by: Harmon[53] at Lake Babine about 1820, by Anderson[54] of the Hudson Bay Company about 1840, by Dawson[55] in 1890, and by Morice[56] at southern Stuart Lake early in this century. The above order is followed in citing them.

one: clottay, ethla, tlooki, iło; *two*: nongki, nankah, nankoh, nañkhê; *three*: toy, ta/taki, tagai, tha; *four*: tingkay, tingi/tingkay, tingi, teñgê; *five*: skoonely, skunlai, iskunlai, kwollai; *six*: alketâte, olkitáke, itlkotagai, łketha (element cognate in all plus *three*); *seven*: tekalti, tákalte, ittagunłti, łthakantl (all contain *three*); *eight*: alketinga, olkitingi/alketinga, ilkuting, łketeñgê (same pattern as in formation of *six*); *nine*: clohooly, lanízi ethlahúla, lanezlukaiunla, ilo hulerh (all of form (*ten*) *one less*).

ten: lan·eezy, lanízi, lanezi, hwonîzyai, *eleven*: ounna clotay, lanízi oat ethla, ———, hwonîzyaiōn·atiło ("teen" element is term for *ten* except in first list—Harmon's).

twenty: not wonnezyah, nat lan ízi, nat lanezi, nathwonîzyai (All of form *two-ten*. Formation of higher decades is regular.)

hundred: nanezyonezeah, lan ízitlaλízi, ———, hwonizyat hwonizyai/hōnded. (*ten* times *ten* in all cases, with an English borrowing as an alternate in Morice's list). Morice gives only thauzañ for *one thousand*, but the earliest list, of Harmon, gives *thousand*: nanezy o lanezy o lanezy. This may of course have been invented by either Harmon or his informant.

Collected over a span of almost a hundred years, these lists exhibit a striking similarity both in individual terms and in structure. They are all of pairing type below *ten*, and decimal above *ten* with *ten* appearing as both "teen" and "ty".

2.18. Sarsi. Two numeral systems are available, one published by Petitot[57] in 1885, the other by Wilson[58] in 1889. Wilson's list is reproduced here with Petitot's terms in parentheses when they differ.

one: à·gligah/klikkazah, *two*: akiye, *three*: tráñki, *four*: didni/diznah (P: ditchin), *five*: kosita (P. kulttan), *six*: kostranni, *seven*: tcístcidi, *eight*: clashdédji (P. klasditchin), *nine*: klákuhigá (P. klakoyiran) (*eight* contains *four*. *Nine* probably contains *one*).

ten: kúnisnañ, *eleven*: klíkkumitañ, *twelve*: akámitañ, *fifteen*: wiltamitan (cf. Petitot *five* kulttan), *sixteen*: wistañmitan (cf. Petitot *six* ustrané).

Columbia, Geol. and Nat. Hist. Survey of Canada (1844), p. 70B; K. 384, #15, and p. 71B, K. 384, #16.

[53] Daniel Harmon, A Journal of Voyages and Travels in the Interior of North America, Andover (1820), p. 413; K. 395, #63.

[54] Horatio Hale, U.S. Exploring Expedition of 1838–42, Vol, VI, (1846), p. 619ff; K. 395, #66 = #68.

[55] Tolmie and Dawson, p. 71B; K. 384, #14.

[56] A. G. Morice, The Carrier Language, Vienna (1932), Vol. I, p. 153; K. 395, #69.

[57] Petitot, Petit Vocabulaire Sarcis, Societe Philologique, Actes, Vol. 14.195–198 (1885), p. 198; K. 393, #61.

[58] Edw. Wilson, Report on Sarcee Indians, Brit. Assoc. for Advancement of Science, Report of 58th Meeting, pp. 233–55, London (1889), pp. 250, 252; K. 395, #62.

twenty: ak'ădde, *thirty*: trañte, *forty*: pisde, *fifty*: kosităté, *sixty*: kostrăté, etc., *hundred*: kunisnánte.

This system is, as will be seen, closely similar to Southern Athapaskan systems in its structure above *twenty*. Also cf. mitañ, the compounding element in the teens (and also for *twenty-one*, etc.) with Beaver mata.

3.0. Pacific Coast Athapaskan Numeral Systems. There were Athapaskan speaking groups in three areas on or near the Pacific Coast. North and south of the Columbia River, separated by Lower Chinook, were the Kwalhioqua and the Clatskanie. In southern Oregon and extreme northwest California were the Coquille, Tututni, Upper Umpqua, Chasta Costa, Rogue River and Tolowa. Further south, in California, and separated from these by the Wiyot and Yurok, were the Hupa, Bear River, Mattole, Kato, Sinkyone, and Nongatl. Numerals are available for all except Rogue River and Tututni. Most have been collected in this century, often from the last speakers of the language.

3.1. Kwalhioqua-Clatskanie. Numerals for both these dialects were collected by Hale about 1840. Teit obtained Kwalhioqua terms from one to five at the beginning of this century, and except for five they correspond to Hale's. In the following list Kwalioqua[59] precedes Clatskanie.[60]

one: txlíé, thlie; *two*: ntáuke, nátoke; *three*: táqe, taqe; *four*: tnútce, tóntçe; *five*: tsukwalóe, tsokwaláe; *six*: kwustánahe, kwostánahe, *seven*: cōsticita, costcita; *eight*: tcániwaha, tcaniwaha; *nine*: txléweet, thleweet (*one* plus weet, which may mean *one lacking*).

ten: kwunéçin, kwonéçin; *twenty*: nat-kwanéce, nat-kwanéçe; *thirty*: takt-kwanéce, takt-kwanéçe: *hundred*: kwanécantkwanése.

Except for the possible analysis of *nine* the system is decimal above and below *ten*. The term for *ten* is the "ty" element. Kwunécin is cognate with the Sarci and Stewart Lake Carrier terms for *ten*.

3.2. Chasta Costa.[61] The following were collected by Sapir in 1906 during his Takelma field work.[62]

one: ła/łā^{a}ca, *two*: năxi, *three*: t'ă̆γi, *four*: dántc!i, *five*: sxôlā, *six*: k'wast'ăne, *seven*: stc!atdé; *eight*: nāxandō (*it lacks two*), *nine*: lándō (*it lacks one*), *ten*: hwê'θe.

This system has separate terms from *one* to *seven*, with *eight* and *nine* of "subtractive" type.

3.3. Upper Umpqua. These lists were collected by Tolmie[63] and by Hale,[64] respectively, around the middle of the last century.

one aiththla, áithla; *two*: nakkyk, nákhok; *three*: taak, tak; *four*: sanchee, tóntcik; *five*: ishweilap, çwolak; *six*: whastaanie; wosthane; *seven*: wheytye, hoitahi; *eight*: nakatie, nakanti (nak *two* + anti, analogous to Chasta Costa nax *two* + andō, translated by Sapir *it lacks two*); *nine*: eilthantie, áilthlanti (aithl *one* + anti; thus *it lacks one*); *ten*: whuneya, ítu (also kwuneza).

eleven: ayttha-yatta, aíthle átan (do not contain term for *ten*).

twenty: tinche, natahwéna (the first unanalyzable, the second possibly nata, a variant of *two* + hwéna, a variant of *ten*).

hundred: whultanie, thlatáci.

Below *ten* this system has the same structure as Chasta Costa. Above *ten* it is decimal, with the "teen" element different from *ten*, and possibly also the "ty" element. *One hundred* is a separate term.

3.4. Coquille. These numerals were col-

[59] Boas and Goddard, Vocabulary of an Athapaskan Dialect of the State of Washington, IJAL 3.39-45; K. 397 #79.

[60] Hale, p. 619; K. 401, #85a$_3$.

[61] For discussion of the locations and mutual intelligibility of Chasta Costa and the other Oregon and northern California Athapaskan languages, see Sapir, 1914, pp. 273–274.

[62] Ibid., p. 296.

[63] John Scouler, Observations on the Indigenous Tribes of the Northwest Coast of America, Royal Geographic Society of London Journal, 11.215–251, London (1841), p. 239; K. 396, #72$_2$.

[64] Hale, 1846, p. 619; K. 396, #72$_4$.

lected in the summer of 1954 at Florence, Oregon from Archie Johnson, a resident of Siletz Oregon, and one of the last speakers of Coquille.

One: łaša, *two*: náxe, *three*: táxe, *four*: dənči, *five*: sxwólax, *six*: kwosta·ne, *seven* sčæte·, *eight*: naxándu (nax *two* + andu, *it lacks two*; cf. Chasta Costa and Upper Umpqua *nine*: łanti (ła *one* + anti, *it lacks one*).

ten: hwæ·sə, *eleven* hwæ·sə łačata (*ten* plus *one* plus čata), etc.

twenty: natən hwæ·sə, *thirty*: tatən hwæ·sə, etc., (variants of *one*, *two*, etc. plus hwæ·sə *ten*).

hundred: čən, *two hundred*: naxəčən, etc.

thousand: hwæ·səčən (hwæ·sə *ten* plus čən *hundred*).

This system is subtractive for *eight* and *nine*, and decimal above *ten*, with *ten* used as both "teen" and "ty" element. There is an unanalyzed term for *hundred*, but a *thousand* is *ten hundred*. Terms from *one* to *ten* are almost identical to Chasta Costa terms.

3.5. Tolowa. Tolowa numerals are available from Dixon and Kroeber's article on California numerals[65] and emendations to their list are available from Driver's 1939 monograph.[66]

one: La, *two:* nax, *three*: tak, *four*: dintce, *five*: cwela, *six*: kostanne, *seven*: tcete, *eight*: lanisut (D: lanicwut natï'a, the second element of which may be a variant of *two* nax), *nine*: Laundui (La *one* plus undui which is probably cognate to Chasta Costa -ando, Umpqua -anti etc., giving this term a meaning of *it lacks one*).

ten: nêsun, *eleven*: La tcata (cf. čata of Coquille 'teens'. Driver gives *eleven* neesô La tcata).

eighteen: nax duxonni tcata (another form for *eight*, containing nax *two*. Driver gives *eighteen* neeso natï'a).

twenty: nadenesun, *thirty*: taknesun, etc.

hundred: La atcun (cognate with Coquille hundred).

This system has a subtractive term for *nine* cognate to other such terms in Pacific Coast Athapaskan languages, and a term for *eight* which though containing *two* is not parallel. Above *ten* the system is decimal, with the teens formed as *one more*, or alternatively, *ten one more*, etc. The term for *ten* also appears as "ty" element. Except for the terms for *eight*, Tolowa, Coquille, and Chasta Costa terms are all cognate.

3.6. Bear River. For the Bear River dialect, spoken by a group occupying coastal territory between the Van Duzen River and Davis Creek and surrounded by Mattole, Sinkyone, Nongatl and Wiyot, Goddard had three informants.[67] Up to *four* the forms given are identical but from there on chaos reigns, and one suspects that the numerals had been for a long time little used.

one to *four*: łaiha', naka, taka, dintce.

five: halabənła, kallamintan, hálla'.

six: bdkk'at łaiha', kotsam, xalla bənła (the first and last of these are clearly quinary, and one sees that *five* halabənła is possibly originally a term for *six*).

seven: bkk'atnake, tcuwsit (the first is quinary, the second is a term cognate with *seven* in other Pacific Coast dialects).

eight, lebadintce (contains *four*), *nine*: łasgot (ła *one* plus -sgot?), *ten*: nesiyan.

3.7. Hupa. The following list was collected by Goddard.[68] Another by Gibbs[69] differs chiefly in the words for *one*, *two* and *three* (klehwunna, nahnih, and hahkín) which seem to correspond to Goddard's numerals applied to persons (*one* Lūwûn, *two* nanin, *three* takun).

one to *four*: La, nax, tak, diñk.

five: tcwola, *six* xōstan, *seven*: xōkit,

[65] Dixon and Kroeber, p. 673; K. 398, ¥80a.

[66] H. E. Driver, Northwest California, Anthropological Records I. 297–433 (1939), p. 400.

[67] E. P. Goddard, The Bear River Dialect of Athapaskan, UCPAAE 24.291–324 (1929), p. 305.

[68] Goddard, Morphology of the Hupa Language, UCPAAE 3.3–344 (1905), pp. 32–33; also Dixon and Kroeber, p. 673; K. 399, ¥82.

[69] H. R. Schoolcraft, Indian Tribes of the U.S., 6 vol., London (1851–57), vol. 3, p. 445; K. 399, ¥81.

eight: kenim, *nine*: kûkkóstan, *ten*: minLûñ. (Seem to be all separate terms.)

eleven: minLûñ mūwanaLa (*ten* plus mūwana plus *one*), *twelve*: minLûñ mūwananax, etc.

twenty: nadim minLûñ (na *two* plus -dim- plus minLûñ *ten*); *thirty*: takutdimminlûñ (tak *three* plus -ut + dim + *ten*) etc.

hundred: La it dikkin (La *one* plus -it- plus dikkin *hundred*), *two hundred*: nax ut dikkin, etc.

This system is decimal above and below *ten*, with *ten* appearing in both "teens" and higher decades, along with an additive element muwana and a multiplicative element utdim.

3.8. Mattole. The numerals below were elicited from one informant, Ike Duncan, by Li[70] in 1930 and by Driver[71] in 1939. Except for slight phonetic differences they are the same, aside from the surprising fact that Driver, in addition to the decimal system above *ten*, elicited a complete vigesimal system, in which the base titcin is the same as Sinkyone *hundred*, and similar to Coquille *hundred* čən. This vigesimal system was characterized by Duncan as "the hard way" in contrast to the decimal "baby way". The decimal system is given below.

one to *four*: láiha', nakxé', da·k'é', dint'syé'.

five: kjikxó·La' (D: tcugólä), *six*: gwostxá·n, *seven*: ła'sgwód (cf. Bear River *nine* łasgot), *eight*: dji't'syéd (D: tcutsiět), *nine*: (D: tcutsiět bŭklět láyäga- *eight* plus *one*), *ten* nisiya'n. *eleven*: nisiyá·n bik'eláiha' (*ten* plus additive element bik'e plus *one*).

twenty: náxe nisiyan, *thirty*: táákle nisiyan.

The vigesimal system is as follows: *twenty*: láyäha tĭtcĭn, *thirty*: láyäha tĭtcĭn nisiyanābŭklĕt (*twenty* plus *ten* plus additive element bŭklĕt), *forty*: naxe tĭtcĭn, *hundred*: tcugóla tĭtcĭn (*five* plus tĭtcĭn).

3.9. Sinkyone- Nongatl. These two dialects were spoken on Eel River drainage. Numerals for both were collected by Driver.[72] The list below is Sinkyone, with differing Nongatl forms following, preceded by N: *one* to *four*: Lá'ha', nak!, taak!, dĭk! *five*: skölá, N: löskö'la; *six*: köstáy, N: bukus Lá (*and one*); *seven*: bukus nak! (*and two*); *eight*: bukus taak! (*and three*); *nine*: bukus tĭk! (*and four*).

ten: La Vágnti, *eleven*: La Vàgntei bukus Lá'ha!, N: bowaLa, etc.

fifteen: töölöskö'la (töö *three*? plus lösköla *five*); *sixteen*: La Vágntei bukukkustay (*ten* plus bukuk plus *six*), *twenty*: natu'nugesäy, N: nak! tnLa Vágntei (Sinkyone is na *two* plus tu'nugesäy; Nongatl is *two* plus tn plus *ten*). Rest of decades on same pattern.

hundred: La'ha' tĭtcĭn (cf. the Mattole vigesimal system *twenty*).

Except for Sinkyone *six* which is cognate to many other Athapaskan terms for *six*, these systems are quinary below *ten*, and in the term for *fifteen*. Otherwise they are decimal. The chief difference between them is the appearance of a new element as "ty" in Sinkyone, whereas in Nongatl *ten* serves as "ty". In Sinkyone, *ten* appears in the "teens", while it does not in Nongatl.

3.10. Kato. The Kato numerals below are taken from Dixon and Kroeber's article on California Numerals.[73] A list given by Goddard[74] is less complete and differs only in details.

one to *four*: Laxa, naka, tak, naka-naka (*four* is *two–two*, the only instance of this in the Athapaskan numerals we have investigated).

five: lasane

six to *nine*: bûn-Laxa, bûn-naka, bûn-tak, bûn-naka-naka. (bûn plus *one*, *two*, etc.).

ten: laL baûñ

eleven to *fourteen*: laL-baûñ bil Laxa, lal-baûñ bil naka, laL-baûñ bil tak, laL-

[70] F. K. Li, Mattole, an Athapaskan Language, Univ. of Chicago Publ. in Anthropology (1930), p. 134; K. 400, *84.

[71] Driver, 1939, p. 400.

[72] Idem.

[73] Dixon and Kroeber, p. 673; K. 400, $*85_2$.

[74] E. P. Goddard, Elements of the Kato Language, UCPAAE 11.1–176 (1912), p. 36; K. 400, $*85_1$.

baûñ bil naka-naka. (*ten* plus bil plus *one*, *two*, etc.)

fifteen: laL baûñ bil lasane (*ten* plus bil plus *five*).

sixteen: laL-sane bil Laxa (shortened form of *fifteen* plus *one*).

twenty: naka dûñ laL-baûñ (*two* plus dûñ plus *ten*), etc.

This system is thus quinary up to *twenty* and from there on is decimal with *ten* appearing in the "tys". Dixon and Kroeber suggest contact with the Pomo and Yuki as a source of the Kato quinary system.

4.0. Southern Athapaskan Numeral Systems. The Southern Athapaskan languages are grouped by Hoijer into Western and Eastern Apachean. The former includes Navaho, Chiricahua-Mescalero, and the San Carlos group (Arivaipa, Pinaleno, San Carlos, White Mountain and Tonto). The latter includes Jicarilla, Lipan and Kiow Apache. Numerals are available for one of the eastern group—Jicarilla—and three of the western group—Navaho, San Carlos (3 dialects), and Mescalero.

4.1. Navaho. The first three lists cited below were collected in the middle of the last century by Whipple,[75] Eaton,[76] and Loew[77] respectively; the fourth was published by Haile[78] in 1940. Other recent lists, of the Franciscan Fathers[79] and of Gladys Reichard[80] are easily available and differ too little from Haile's to warrant reproducing them here.

one: tathlai, tláhee, akhlai, ła/ɬá·i/t'áɬá·i; *two*: náki, nahkée, aki, na·ki; *three*: t'ha, tañh, ka, tˣá·'; *four*: t'hi, tee, te, dí·'; *five*: estclá, est'lah, astla, ʔàšƛa'; *six*: hastár, hustáh, ustã, xastˣá; *seven*: tsotzi, soostsél, sustsit, cisćid; *eight*: tséppi, tsaipée, sepi, ce·bí·ʔ; *nine*: nasttái, nastái, nastai, ná·xást'ái.

ten: niethné, neznah, nestna, ne·zná; *eleven*: cladata, tlaitsahtah, khlatata, ła'-câ·da; (*one* plus -ca·da or closely similar element; cf. Coquille čata in *eleven*, *twelve*, etc.).

twelve: nakidata, nahkeetsahtah, naketata, na·kićâ·da.

twenty: nattin, nahteén, naatin, nadi·n (na *two* plus din, which serves as "ty" element throughout).

hundred: ———, neznahteén, nestuatin, ne·znádi·n.

thousand: ———, neznáhdeebaioáttsil, ———, mi·l (The first contains *ten* and other unanalyzed elements, the second is a Spanish borrowing.)

This system is completely decimal. The term for *ten* is not used in forming either the "teens" or the "-tys". The combining form for the "teens", ca·da, is common in the Pacific Coast languages.

4.2. San Carlos group. All the numerals available for these dialects were collected between 1870 and 1890, approximately. The first two cited are Arivaipa, collected by Gilbert[81] and Loew,[82] respectively; the last two are White Mountain collected by Dugan[83] and San Carlos collected by White.[84]

one: dātla, takhlā, dischlai, darcli; *two*:

[75] Whipple, Eubank and Turner, Exploration and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean, Washington (1855), pp. 81–83; K. 405, $*87_1 = 87_6$.

[76] Schoolcraft, vol. 4, p. 429; K. 405, $*87_3$.

[77] A. S. Gatschet, Zwölf Sprachen aus dem Südwesten Nordamerikas, Weimar (1876), pp. 98–115; also,

[77a] George M. Wheeler, Report on U.S. Geographical Surveys, Appendix to vol. 7, "Linguistics" by Gatschet, Washington (1879), pp. 464–65, 469; K. 405, 87_4.

[78] Franciscan Fathers, A Vocabulary of the Navaho Language, St. Michaels (1912); K. 406, $*87_5$.

[79] Fr. Berard Haile, Learning Navaho, 4 vol., St. Michaels (1941–45), vol. 3, p. 229.

[80] Gladys Reichard, Navaho Grammar, AESP 21 (1951), p. 150.

[81] Wheeler, pp. 164–65; K. 404, $*86_1$.

[82] Wheeler, pp. 468–69; K. 404, $*86_2$.

[83] Allen, p. 135; K. 406, $*88_1$.

[84] Gatschet, pp. 99–115; K. 406, $*88_2$.

nage, naki, na·kée, narke; *three*: tage/kage, rhage, tágy, targe; *four*: tie, tiiⁿ, dingy, dinghe; *five*: estli, ashtlá, sellai, ishkli; *six*: goston, ustrhan, goostán, gustún; *seven*: gastede, ustsiki, gooselty, gussede; *eight*: sēpi, tsepi, saybée, sapé; *nine*: 'ngosta, ngostai, goostai, gūsti.

eleven: tladata, khlatata, ———, clarsá rtur; (*one* plus data; cf. Navaho et al).

twenty: nātin, nātin, ———, nartin. (*two* plus -tin for which cf. Navaho.)

hundred: koneznatin, gutesnontin, ———, gunisnartin, (*ten* plus -tin).

thousand: koneznonkoneznatin, mil, ———, gunisnúngunisnartin, (*ten* plus *ten* plus -tin, except for mil which is Spanish).

These systems are decimal, with the "teens" and decades formed exactly the same as in Navaho.

4.3. Mescalero: This list was collected by Cremony in about 1868.[85]

one: tashayay, *two*: nahkee, *three*: kayay, *four*: inyeh, *five*: ashtlay, *six*: hostkonnay, *seven*: hosteeday, *eight*: hahpee, *nine*: 'nghostay, *ten*: gonayhannay.

eleven: klatsahtah (klat-, an alternate form for *one* plus sahtah); *twelve*: nahkeesahtah, etc.

twenty: natinyay (na *two* plus -tin plus yay), *thirty*: kahtinyay, etc.

hundred: tahlentoo-ooh.

thousand: gonaynan too ooh (*ten* plus *hundred*).

This system is decimal throughout, and except for the new term for *hundred* is of exactly the same structure as Navaho and the other Apache numeral systems.

4.4. Jicarilla. One list of numerals is available for Jicarilla, collected by Yarrow,[86] at Tierra Amarillo, New Mexico in 1874.

one to *four*: tahchleè, nahkeè, kieè, tineè.

five: atschleè, *six*: coscon, *seven*: cossetpeè, *eight*: tsapee, *nine*: nusteè, *ten* coneznàn.

eleven: klatsàttcheh (klat- a variant form of *one* plus satscheh), *twelve*: nakeètsatscheh, etc.

twenty: nahtìn (nah *two* plus -tin), *thirty*: kahtin, etc.

hundred: conesnottin (*ten* plus -tin).

thousand: ya·chet tin sas quò in to go (unanalyzed).

As in the other Apachean languages, this system is decimal throughout and the structure of the "teens" and decades is exactly the same.

[85] John C. Cremony, Life Among the Apaches, San Francisco (1868), pp. 238–9; also in H. H. Bancroft, Native Races of the Pacific States of North America, New York (1874), vol. 3, p. 599.

[86] Wheeler, p. 470; K. 405, #86a.

CUICATECO: MORPHEMICS AND MORPHOPHONEMICS[1]

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0. The phonemics of Cuicateco are dealt with in a preceding paper.[2] Morphemics is treated below in **1.** in which the affixes and stem types are listed in their possible occurrences. The affixes are listed, given morpheme index numbers and referred to by their number. The suffixes are a unique paradigmatic set of person markers which may be conveniently classified as phrase-final suffixes. Morphophonemics is dealt with in **2.** below, with sets of morphophonemic symbols given for tone change, vowel harmony and vowel stem suppletion.

1. Morphemic Distribution.

1.1. Affixes and their distribution with stems. Prefixes have decade numbers 10–90 and phrase-final suffixes have decade numbers 100–110. Decades 10–70 occur with verb stems. 10–20 is an obligatory set of tense-aspect markers that occur with verb stems which have initial consonant/s (except ʔ). Decade 10–20 may be followed by 30 and/or 40 and/or 50 with any one, two or three in their relative order—30 precedes 40 or 50, 40 precedes 50. 60–70 is an obligatory set of tense-aspect markers that occur with verb stems which have initial ʔ or initial vowel. 80–90 is a set of noun determinant prefixes. Decades 50, 60–70, and 80–90 occur immediately preceding stems and are mutually exclusive.

1.1.1. Word-initial prefixes. These prefixes are the determinant prefixes for verb and noun words.

1.1.1.1. Prefixes with decade numbers 10–20 and 60–70 are the determinant prefixes for verb-words. Decade 10–20: 11 i-, 12 ∗, present progressive markers (ī-nāānú *I am washing*, ∗-kē-nēé^{a} *I am remaining*). 13 ∗, 14 t^{s}i-, 15 ke-, 16 ki-, past tense markers (∗-nāānú *I washed*, t^{s}ī-nk^{w}āí *I bought*, kē-ntūūt^{s}í *I was awake*, kī-yāāđó *I was asleep*). 17 ni-, remote past tense marker (nī-nāānú *I have washed*). 18 ∗, 19

[1] Cuicateco is spoken in the district of Cuicatlán, Oaxaca, Mexico. This paper deals with the dialect spoken in the village of Concepción Pápalo. Field data were gathered over a period of years under the auspices of the Summer Institute of Linguistics. This paper was written at Indiana University and the authors wish to express their appreciation to C. F. Voegelin for his helpful suggestions given in the statement of the data.

[2] See Doris Needham and Marjorie Davis, Cuicateco Phonology, IJAL 12.139–46 (1946). Note that further data have changed the analysis of e and ɛ, uniting them into one phoneme. Long vowels are treated as vowel clusters in this paper.

ku-, 21 ko-, 22 ka-, potential marker (*-nāānú *I will wash*, kū-ntūūtˢ́ *I will be awake*, kō-nūúⁿ *I will put on*, kā-nkūú *I will leave*).

Decade 60–70: 61 x-, 62 *-, present progressive marker (x-īīká *I am walking*, *-ʔíká *I am cutting*). 63 tˢ-, 64 k-, past tense markers (tˢ-íká *I walked*, k-āá *I jumped*). 65 n-, 66 nt-, 67 ni-, remote past tense markers (n-īīnú *I have planted*, nt-ī́ *I have finished*, nī-nkāⁿʔáⁿ *I have given*. 68 k-, 69 kʷ-, 71 tˢ-, potential markers (k-āʔá *I will give*, kʷ-āākú *I will cry*, tˢ-ēʔé *I will eat*).

1.1.1.2. Prefixes with decade numbers 80–90 are the determinant prefixes for noun-words. 81 na-, associative (nā-tāī *altar*), 82 ða-, personalizer (ðā-kʷāʔà *baby*), 83 sa-, animal indicator (sāʔīībī *trantula*), 84 i-generic (ī-nkāàⁿ *corn*), 85–93 undeterminants: 85 ko-, 86 ðe-, 87 te, 88 ni-, 89 ði-, 91 ka-, 92 sti-, 93 n̰-[3](kòʔāāⁿ *day after tomorrow*, dē-ntyóòs *god*, tē-kāī *clothes*, nī-ntáʔāī *corner post*, dī-xūūkū *owl*, kā-ʔīīntū *rat*, stī-nkʷáʔà *sparrow*, n̰-tīīⁿyūⁿ *work*).

1.1.2. Non-initial prefixes with verb stems are prefixes with decade numbers 30, 40, and 50. 30: 31 -na- repetitive (ī-nā-ðā-nʔtūūtˢ́ *I am waking up others again*, ī-nā-ʔnúⁿʔūⁿ-dē *you are restirring*). 40: 41 -ka-, 42 -na-, instrumental (ī-kā-ʔnūúⁿ *I am carrying*, ī-nā-báāʔ *it is opening*), 43 -ða-, noninstrumental (ī-ðā-tūùbí *I am erasing*), 44 -ni-, undeterminant (ī-nī-nkʷéé-ðé *you are stopping your work*), 50: 51 -ða-, 52 -na-, 53 -ʔ-[4], 54 -ku-, nonreflexive indicators (ī-nā-ðà kūūkú *I am adorning others*, ī-nā-dīīⁿkāānī-dē *you are making others hurry*, ī-nā-ðā-nʔtūūtˢ́ *I am waking others again*, ī-kū-nʔtīīkū-dē *you are hanging things up*), 55 -ke- reversal (ī-kē-nʔtáā-ðē *you are going out* [compare with ī-nʔtáā-ðē *you are arriving*]), 56 -tu- potentiality (ī-tū-nēēⁿ-ðē *you are having the ability to do*).

1.1.3. Stems with no prefixial association are particles. Particle stems are equivalent to particle-words.

1.1.4. Phrase-final suffixes. A paradigmatic set of suffixial person markers may occur with all three word classes and have the decade numbers of 100–110. 101 [′, the final stem tone raised] first person singular human marker (see **3.2.2**) (ī-ðūùtˢ́ *I am playing*, nāáⁿ *my face*, yēⁿʔéⁿ *of mine*). 102 -dē second person familiar human marker[5] (ī-ðūùtˢ́ī-dē *you familiar are playing*, nāāⁿ-dē *your face, familiar*, yēⁿʔēⁿ-ðe *of yours, familiar*. 103 -nì second person polite human marker (ī-ðūùtˢ́ī-nì *you, polite, are playing*, nāáⁿ-nì *your face, polite*, yēⁿʔéⁿ-nì *of yours, polite*). 104 -sa third person masculine human marker (ī-ðūùtˢ́ī-sā *he is playing*, nāāⁿ-sā *his face*, yēⁿʔēⁿ-sā *of his*). 105 -tá third person feminine human marker-(ī-ðūùtˢ́ī-tá *she is playing*, nāāⁿ-tá *her face*, yēⁿʔēⁿ-tá *of hers*). 106 -yà third person respectful human marker (ī-ðūùtˢ́ī-yà *he/she* is playing, *nāáⁿ-yà his/her face*, yēⁿʔéⁿ-yà *of his/hers*). 107 -tì third person animate non-human marker (ī-ðūùtˢ́ī-tì *the animal is playing*, nāáⁿ-tì *animal's face*, yēⁿʔéⁿ-tì *of the animal*). 108 -nū first person plural exclusive human marker (ī-ðūùtˢ́ī-nū *we exclusive are playing*, nāāⁿ-nū *our faces, exclusive*, yēⁿʔeⁿ-nū *of ours, exclusive*). 109 [Fused oʔ ± regressive vowel harmony] first person plural inclusive human marker (see **2.3.2**) (ī-ðūùtˢ́ʔŪʔ *we inclusive are playing*, nĀĀⁿʔ *our inclusive faces*, yĒⁿ ʔĒⁿʔ *of ours, inclusive*). 111 [ˋ, the final stem tone lowered ± ʔ] third person indefinite marker (see **2.2.2**) (ī-ðūùtˢ́ìʔ *it is playing*, nāàⁿʔ *its face*, yēⁿʔèⁿ *of its*).

1.2. Major word classes.

1.2.1. Verb-words are composed of stems associated with affixes 10–20 and 60–70, and are approximately 700 in number. According to the syntactic distribution 50 particles have the same distribution as verb-words and

[3] Syllabic n occurs as a prefix to approximately six noun stems and historically comes from a longer form 'na-' whose meaning is obscure.

[4] See section **2.1.**

[5] Suffixes indicate both singular and plural except the first person markers and the indefinite marker which is singular.

are static verbs. Potential verb-words are 750 in number.

Of the 750 potential verb-words 450 are simple and 300 complex. The complex stems are composed of two, three or four morphemes. Approximately 40 morphemes are limited in their distribution to complex verb stems occurring in first and second position. These are symbolized by *V*

Combinatorial morphemes in verb stems are: 20 *V*, 100 V (for verb), and 15 P (for particle), in first position, 20 *V*, 50 V, 50 P, and 80 *N* (for noun) in second position, 10 P, 10 N in third position, and 5 N in fourth position. Stems of two morphemes may have *V*, V or P in first position followed by *V*, V, N, or P in second position (*V* + *V* tīⁿmīⁿ + kūūⁿ-đē *you familiar permitted*, *V* + V ʔnāānā + nkáá-đé *you familiar gathered*, *V* + N ʔīnī + vāākū-đē *you familiar married*, *V* + P ʔēⁿʔèⁿ + nʔtāī-đē *you familiar hit hard*, V + *V* ī-đā-xúúⁿ + ʔđāāⁿ-đē *you familiar are* writing, V + V ʔèʔè + nààⁿ-đē *you familiar are disappearing*, V + P ī-nā-teētᵗ̄ī + nʔtāī-đē *you familiar are guarding*, P + *V* ī-néé + bèʔè-đē *you familiar are crossing*, P + V ī-tᵗ̄ī + nʔtíī-đē *you familiar are covering*, P + N ī-nēēⁿ + nāáⁿ *I am taking care of*, P + P đūutᵗ̄ī + néé-đē *you familiar made fun of*).

Stems of three morphemes may have V + P + P, *V* + P + N, *V* + V + N, V + N + N, P + V + N, or P + N + P (V + P + P xūī + đíítù + kāā-đē *you familiar have more strength*, *V* + P + N ʔéēⁿ + máíⁿ + nááⁿ-đē *you familiar are fainting*, *V* + V + N nāāmē + ʔnéé + xūùbì-đē *you familiar are giving nick-names*, V + N + N nāābē + nyááⁿ + đūùđù-đē *you familiar had chills*, P + V + N í-tᵗ̄í + nʔtíí + tāʔà-đē *you familiar are protecting*, P + N + P nààtᵗ̄ī + kʷàāⁿ + yéⁿʔèⁿ-đē *you familiar felt*).

Stems of four morphemes have V + N + N + N or *V* + P + P + N (V + N + N + N ī-nā-ʔbēⁿʔēⁿ + xíímá + ntūūtī + náāⁿ-đē *you familiar are blinking*, V + P + P + N nāāmē + néēⁿ + yāʔàì + xīīnō-đē *you familiar felt sorry for*).

1.2.2. Noun-word class. Noun-words are composed of stems associated with affixes 80–90 and are approximately 100 in number. According to the syntactic distribution 550 particles have the same distribution as noun-words making 650 potential noun-words. Of the 650 potential noun-words 350 are simple stems and 300 are complex stems. Complex stems are composed of two or three morphemes. Approximately 80 morphemes are limited in their distribution to complex noun stems in which one or two may occur. These are symbolized by *N* and may occur in first, second or third position.

Combinatorial morphemes in noun stems are: 150 N, 25 *N* and 20 P in first position, 100 N, 50 *N*, 15 P, and 15 V in second position, 5 N, 5 *N* and 2 P in third position. Stems of two morphemes may have *N*, N, or P in first position and *N*, N, P, or V in second position (*N* + *N* bēēntì + kūūⁿ *honor*, *N* + N yúúđí + xūūbī *pomegranate*, *N* + P ntūūbà-kʷēīʔ *pear-like fruit*, *N* + V bēèdè + xáʔà *gift*, N + *N* ntūūđū + đáánà *foreign language*, N + N bāākū + yáⁿʔàⁿ *stove*, N + P ʔyāíⁿyà + kʷáʔà *lion*, N + V ʔūkú + xāʔàʔ *ant*, P + N tᵗ̄ī + đūúbì *cockroach*, P + N ntūūkù + đīīⁿyūⁿ *a switch*, P + P tᵗ̄ī + đáábá *heart*, P + V tᵗ̄ī + ʔāākū *a sound*).

Stems of three morphemes may have N + *N* + *N*/N, N + N + *N*/N/P, N + P + N, P + N + P (*N* + *N* + *N* ntūūtī + kāālā + bēⁿʔèⁿʔ *somersault*, N + *N* + N nūùⁿnì + ʔīđī + ʔīxūùbì *fig*, N + N + *N* ntūūtī + nááⁿ + nēēsō *a wild fruit*, N + N + N yāàtà + táʔà + ʔyáíⁿyà *wild yellow flower*, N + N + P yáⁿʔàⁿ + yúūđù + kùùmā *desert*, N + P + N ntūūtī + xáʔáí + īxūùbì *tropical fruit*, P + N + P tᵗ̄ī + kūⁿʔūⁿ + ntīíkù *great grandmother*).

1.2.3. Particle words are stems which have no association with prefixes and are approximately 700 in number. According to the syntactic distribution 550 may function as

noun-words, 50 may function as static verbs and the remaining 100 as particles.

Complex particles are of two types, numerical and non-numerical. Approximately 15 non-numerical complex particles occur and are composed of P + P or P + N (P + P ntū + kwē^{n}ʔē^{n} *all*, P + N nā + nāā^{n} *in front of*). Complex numerical particles are composed of two to five numerical particles. Numbers one through ten and twenty are simple. All other numbers are formed by combinations of simple numbers and with the complex numeral fifteen (ntī-tīī^{n} ʔyū). (ntūkù + ʔīnū 23, ʔīnù + xāākū + ntūt^{s}ī 90, ʔīnù + xāākū + ntūt^{s}ī + ʔīnù 93, ʔīnù + xāākū + ntī + tīī^{n}ʔyú + ʔīnù 98).

2. Morphophonemics includes metathesis, tone change, vowel harmony, stem suppletion, and addition and subtraction.

2.1. The ʔ metathesizes with an adjacent consonant to form a permitted consonant cluster (nt + ʔīt^{s}ī > nʔtīt^{s}ī *have sowed*, ʔ + ntūūt^{s}ī > nʔtūūt^{s}ī *have awakened others*).

2.2. Tone changes are of two types, phonological and morphological. Phonological tone changes are symbolized with regular tone marks (ˊ, ¯, ˋ) and morphological tone changes are symbolized with bold face letters and tone marks (**ˊ**, **¯**, **ˋ**). The numbers ^{1}, ^{2}, and ^{3} (^{1} referring to high tone, ^{2} to mid tone, and ^{3} to low tone) occurring after the tone marks refer to the basic tone with ¯^{1}, ˋ^{1}, ¯^{1}, and **ˋ**^{1} having high tone as their basic tone, with ˊ^{2}, ˋ^{2}, **ˊ**^{2}, and **ˋ**^{2} having mid tone as their basic tone, with ˊ^{3}, ¯^{3}, **ˊ**^{3}, and **¯**^{3} having low tone as their tone. Various phonological and morphological tone changes occur and are referred to although a complete analysis has not been made. From the observations made changes have been set up on the basis of the morpheme—whether it has or has not the power to change tones of another morpheme and whether its tone may or may not be changed by other morphemes.

2.2.1. Phonological tone changes are regressive within the word, and progressive and regressive between words and between words and phrase-final suffixes.

Regressive tone change within the word occurs with verb prefixes. Certain stems have the power to change the tone of the preceding prefix or prefixes (ʃ^{2}-tūùdù-đē *you familiar are throwing*, nʃ^{2}-nā-nʔtōòdē *you familiar have stretched*, nʃ^{2}-nā-đà^{2}-nʔtāī-đē *you familiar have fixed*).

Progressive and regressive tone change occur between words. Progressive change: yá^{n}ʔā^{n} nʔtà^{2}ʔ^{2} *good sun*, ʔáámá t^{s}ʃ^{2} *one that*, ʔlíí^{n} mí^{2}ʃ^{2n} *this little one*. Regressive changes: ʔk^{w}ēʃ^{2} yāàbà *pretty grass*, ʔyā^{1}ʃ^{3n} ʔkùù *that candle*. Progressive and regressive changes: ʔáámá ʔīī^{3n}ʔyá^{3} ʔkùù *this one person* (compare ʔáámá ʔīī^{3}ʔyà *one person* with ʔīī^{n}ʔyá^{3} ʔkùù *this person*).

Progressive and regressive tone changes between words and phrase-final suffix (kénéé^{n}-đé^{2} *you familiar are remaining*, đīī^{2n}-yà *he/she respectful made*.

2.2.2. Suffix 101 is indicated by a raised tone on the final stem vowel with high tone remaining high. If the preceding vowel of the resultant form is the same tone then it is lowered one level. (tāʔá^{2} *my hand*, ntīīt^{s}ʃ^{2} *I saw*, ntūūkú^{2} *with me*, ntè^{2}ē^{3} *I spoke*, đī^{1}ī^{1}má^{2} *my skin*, ʔđā^{1}á^{1n} *my fingernail*, tāʔā ʔkùū^{3} *this hand of mine*).

Suffix 111 is generally indicated by a low tone on the final stem vowel and may be immediately followed by a ʔ. (tāʔà^{2}ʔ *somebody's hand*, ntīīt^{s}ʃ^{2}ʔ *somebody saw*, ntūūkù^{2} *with someone*).

2.3. There are two types of vowel harmony, optional harmony in the verb prefixes and obligatory harmony in stems which precede suffix 109.

2.3.1. In verb prefixes 31, 42, 43, 51, 52, and 55 following prefix 17 optional progressive complete vowel harmony occurs affecting the following one or two prefixes (nʃ^{2}-nā-đà^{2}-kūūkú^{2} or nʃ-nī-đà^{2}-kūūkú^{2} or nʃ^{2}-nī-đī^{2}-kūūkú^{2} *I have adorned others*, nī-nà^{2}-nāā^{n}ʔmʃ^{2} or nī-nī^{2}-nāā^{n}ʔmʃ^{2} *I have*

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shown, nī-kē-nʔtāá[2] or nī-kī-nʔtāá[2] *I have gone out.*

2.3.2. Obligatory vowel harmony[6] occurs in morphemes with phrase-final suffix 109 in the preceding morpheme or sequence of two morphemes. Morphophonemic vowel symbols are: I for i > o, E for e > o, A for a > o, U for u > o, *A* for a > e, **A** for a > i, *E* for e > u.

Final front, central and high back vowels > o. (ʔĪⁿʔĪⁿʔ *we inclusive are showing*, ɪ-ʔnēēnĒʔ *we inclusive are peeling*, ɪ-đā-kūūbĀʔ *we inclusive are tightening*). Non-final a in diphthong and rearticulated vowels > o (xĀĪʔ *we inclusive are buying*, ɪ-kū-nʔtÁʔĀĪʔ *we inclusive are opening*, tĀʔĀʔ *our inclusive hands*). Non-final a in a final vowel cluster > o or e (nĀĀⁿʔ *our inclusive faces*, tʰÁĀʔ *we inclusive supported*). When a morpheme contains an identical vowel cluster aa and is followed by a syllable containing a short front or central vowel the aa > oo, and when the cluster is followed by a syllable containing a back vowel the aa > ei[7] (ʔɪ̄kū-kĀĀđĒʔ *we inclusive are arranging*, tʰĀĀkŪʔ *our inclusive mother*). e > u in the morpheme *of* (yĒⁿʔĒⁿ).

2.4. Suppletion occurs in classes R, S, T, W, X, Y, and Z with vowel stem suppletion in class R and verb-word tone suppletion in classes S — Z.

2.4.1. Vowel suppletion is restricted to approximately 65 verb stems and symbolized with the same morphophonemic vowel symbols as in section **2.3.2** with the addition of ʌ for a > u, *I* for i > u, and *U* for u > i. Identical stem final vowel clusters of aa > uu and final and non-final uu > ii (ʔÁʌⁿ-đé *you familiar are filling*, xÛÛ-đē *you familiar are throwing*, xÛÚná-đé *you familiar are bathing yourself*). Rearticulated aʔa > eʔe, and uʔu > iʔi (xĀⁿʔĀⁿ-đē *you familiar are going*, xŪⁿʔŪⁿ-đē *you familiar are drinking*). Non-final aa > ii or ee (x**AA**nū-dē *you familiar are digging*, x*AA*no-đē *you familiar are running*). Within a morpheme non-final aa with a in the following syllable > ii . . . i (ʔ**ĀĀnA** + vēēⁿ-đē *you familiar are hearing*). uu > ii and ii > uu in a few morphemes where the single vowel in the final syllable determines the change and the final syllable is subtracted. (xŪŪ(bi)-đē *you familiar are being able*, xĪĪ(yù) *it is drying*).

2.4.2. Tone suppletion occurs in verb-word classes S — Z in approximately 300 verbs. Various patterns of tone changes occur within the classes. Classes S and T have two tone patterns for each verb. Class S: (1) Potential, Present Progressive, Remote Past (2) Past (*#*-nūūⁿ-đē *you will hunt*; *#*-nūùⁿ-đē *you hunted*). Class T: (1) Potential, Present Progressive, Past (2) Remote Past (*#*-đūⁿʔnù-đē *you will squeeze*; ní-đúⁿʔnú-dé *you have squeezed*). Classes W, X and Y have three tone patterns for each verb-word. Class W: (1) Potential and Remote Past, (2) Present Progressive, (3) Past (*#*-đīīⁿđāānā-đē *you will wear new clothes*; ɪ-đīīⁿđáánā-đē *you are wearing new clothes*, *#*-đīīⁿđáánā-đē *you wore new clothes*). Class X: (1) Potential and Past, (2) Present Progressive, (3) Remote Past; (*#*-đā-ʔkuunī-đē, *you will chew*; i-đa-ʔkuunī-đē *you are chewing*; nī-đā-ʔkūūní-đé *you have chewed*). Class Y: (1) Potential and Present Progressive; (2) Past, (3) Remote Past; (kā-nà-nkʷēēⁿ-đe *you will stand it up*; tʰɪ-na-nkʷéénⁿ-đé *you stood it up*; ní-ní-nkʷēēⁿ-đē *you have stood it up*). Class Z has four tone patterns for each verb (1) Potential, (2) Present Progressive (3) Past, (4) Remote Past (*#*-đīxìkū-đē *you will cure*; ɪ-đīīxīīkú-dé *you are curing*, *#*-đīīxūkū-đē *you cured*; nī-đīīxīīkū-đē *you have cured*).

2.5. Addition of n and k in complex stems.[8]

[6] See footnote 2. Note section **3.1.0.1** of Cuicateco Phonology.

[7] The following are the exceptions to aa > oo: kAAnUʔ *we inclusive ran*, ɪ-kū-ʔyAAtUʔ *we inclusive are tying*, nAAnAʔ *we inclusive washed*, ɪ-tAAkAʔ *we inclusive are scratching*, ɪ-nā-ʔnAAnAʔ *we inclusive are standing it up again*.

[8] See footnote 2. Note section **3.2** of Cuicateco Phonology.

n is added between a morpheme ending in a nasal vowel and a morpheme beginning with a stop (ḏyááⁿ *metal* + kʷáá *white* > ḏyááⁿnkʷāā *silver*). k may be added between a morpheme ending in a high vowel and a morpheme beginning with a y (ī- 'prefix 84' + yáⁿʔàⁿ *tree* > ī-kyáⁿʔà *forest*, ḏūūⁿ *grease* + yálⁿʔ *candle* > ḏūūⁿkyálⁿʔ *lard*).

Final consonant-vowel (CV) is subtracted in certain morphemes in verb stems in class T. When subtraction occurs (indicated by parenthesis) and the resultant form ends with a ʔ, the ʔ metathesizes with the preceding vowel. (ʔkūūⁿ (maⁿ) ʔúuⁿ *it is breaking*, kaaⁿʔ(ma) xaⁿʔaⁿ *saying*, kuu(vi) x*UU to be able*).

Bi-forms occur in compounding and retain the initial part of the full form at least through the first vowel of the morpheme (ḇāākū -house + kūù *iron* bākūù *jail*, ntūūkū with + yáⁿʔàⁿ *fire* ntūūkyáⁿʔàⁿ). Nasal vowels in bi-forms lose their nasality (ī-ḏīⁿvíī-ḏē may become ī-ḏīvíī-ḏē *you are separating*).

CHAMA PHONOLOGY

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0. Introduction
1. Phonemes and their description
2. Phonemic syllables
3. Distribution of the phonemes
4. Morphophonemic statement

0. Chama[1] has been classified as a linguistic branch of the Tiatinagua group of languages[2]; which, in turn, has been called a subdivision of the Tacana linguistic family.[3]

1. There are twenty-eight segmental phonemes, and four suprasegmental phonemes in Chama.

1.1. The consonant phonemes may be divided into four groups: stops, oral continuants, nasal continuants, and an affricate.

1.1.1. The stops are p, t, k, k^w, b, d, g, g^w.

p, t, k, k^w are voiceless phonemes with slightly aspirated allophones before a primary stressed vowel; elsewhere they have unaspirated allophones. t is dental—that is, it is pronounced with the tongue tip against the back of the upper teeth. k has backed allophones before the back vowel, o; elsewhere it is palatal and has allophones articulated at the back part of the hard palate. k^w is a labialized back velar stop: péa *another*, tée *abdomen*, kiatéwi *black*, k^wáki *kindling wood*.

b, d, g, g^w are the voiced stops. d is dental —that is, articulated against the back of the upper teeth. g has a backed allophone before the back vowel, o; elsewhere it has an allophone that is articulated at the back part of the hard palate. g^w is a labialized back velar: bá *machete*, dáki *cloth or clothing*, gámo *thick*, g^wáxi *chocolate*.

1.1.2. The oral continuants are s, š, x, x^w, w, y, h.

The s and š are voiceless sibilants. The s is dental with light friction. š is a palatal: séwi *dirty*, šáawi *tapir*.

x and x^w are voiceless. x is articulated at the back of the hard palate except preceding the back vowel where it has a backed allophone. x^w is a labialized back velar: xíxiani *burning*, x^wáani *put*.

w, y, h are semivowels. w is rounded and contrasts with g^w: wéhi *nephew*, g^wéhi *thunder*. w has an opener allophone in syllables with weak stress following open juncture than it does elsewhere. y, also, has an opener allophone in syllables with weak stress following open juncture than it does elsewhere.

h is voiceless with the timbre of the following vowel; therefore, all of the allophones are in complementary distribution. h is found in contrast with x; e.g., hahák^{w}i *cut (command)*, xaxasí *post*. Examples: yóok^{w}i *row a canoe (command)*, hok^{w}á *distant*.

1.1.3. The nasal continuants are M, N, Ñ, Ŋ, m, n, ñ, ŋ.

Each of the voiced nasal continuants has a phonetically complex allophone, consisting of a nasal plus homorganic stop ([mb, nd, ñǧ, ŋg̊]), that varies freely with the pho-

[1] The field work for this study was done in the settlement of Esperanza—located on the Beni river of Bolivia, three hours below the village of Rurrenabaque. The settlement was composed of eight or ten families. These families had recently moved to their present locality from the port of Reyes. The Chamas frequently visited the village of Rurrenabaque to sell produce and visit the moving picture theater. A number of the men, including the author's informant, spoke Spanish.

[2] Alfred Métraux, "Tribes of Eastern Bolivia and the Madeira Headwaters", Handbook of South American Indians, ed. by Julian H. Steward, Smithsonian Institute, BAE-B 143, V3 (Washington: Government Printing Office, 1948) 439.

[3] Créqui-Montfort and Rivet, cited by Métraux, Ibid.

netically simple voiced nasal allophone ([m, n, ñ, ŋ]) before a single vowel within the word—when that vowel is not followed by open juncture. When the single vowel is followed by open juncture, i.e., is word or utterance final; the phonemes m, n, ñ, ŋ have phonetically simple voiced nasal allophones varying freely with phonetically simple voiceless nasal allophones, and the phonetically complex (nasal plus homorganic stop) voiced allophones: [M ~ m ~ mb], [N ~ n ~ nd], [Ñ ~ ñ ~ ñǧ], [Ɲ ~ ŋ ~ ŋǧ].

The stop segments of the phonetically complex allophones of the voiceless nasal phonemes are voiceless. The stop segments of the phonetically complex allophones of the voiced nasal phonemes are voiced.

N and n are dentals. Ñ and ñ are articulated at the back part of the hard palate unless they precede the back vowel, o, where they are backed to the velar position. Ɲ and ŋ are back velar nasals. Examples: Mikáapi *pair or couple*, Nahákʷi *wash (command)*, Ñóokekʷi *hunt (command)*, eƝáŋo *tail of animal*, mái *moon*, nái *mother*, ñobíkʷi *enter (command)*, šapóoŋi *turtle*.

1.1.4. The affricate, č, is a voiceless palatal. Example: čamá *there is not*.

1.2. The vowel phonemes are i, e, a, o.

All of the vowel phonemes have close allophones ([i, e, a, o]) under primary stress; otherwise they are open ([ɪ, ᴇ, ᴀ, o]). For each of the vowel phonemes under weak stress and before open juncture there is free variation between open voiced and open voiceless allophones ([ɪ ~ I, ᴇ ~ E, ᴀ ~ A, o ~ O]). The vowel o has free variation between a high open back allophone ([ʊ]) and a mid open back allophone ([o]) when it is under weak stress and following č, s, š. When the phoneme o is under weak stress following č, s, š and preceding open juncture it has free variation between a voiceless high open back allophone ([U]), a voiceless mid open back allophone ([O]), a voiced high open back allophone ([ʊ]), and a voiced mid open back allophone ([o])—[U ~ O ~ ʊ ~ o].

1.3. The suprasegmental phonemes are: primary stress, weak stress, close juncture, and open juncture.

The primary stress phoneme has a simultaneous phenomena of high pitch. The weak stress is accompanied by low pitch. The primary stress may fall on any syllable within the word. There is one primary stress per word. Examples: éxa *people*, exá *egg*.

The distinguishing features of the open juncture are the glottal stop, unvoicing of the vowels and voiced nasals.

The initial open juncture is distinguished by a plain glottal stop preceding voiced segmental phonemes, with the exception of the voiced nasals. The plain glottal stop distinguishes the open juncture terminally when it is preceded by a primary stressed vowel, or when the final vowel is not unvoiced under weak stress. The glottal stop is sometimes nasally released in terminal open juncture.

Initially, preceding the nasal consonants the open juncture is characterized by a nasally released glottal stop. Initially, preceding the voiceless consonants (other than nasals) the open juncture is characterized by a glottal stop that has a voiceless palatal release. Examples: [ʔbáʔ] *machete*, [ʔ^{n}íNI] *bee*, [ʔ^{m}máo^{n}A] *forehead*, [ʔIsákʷI] *break (command)*.

Unvoicing of the vowels distinguishes the open juncture when the vowels are under weak stress preceding the juncture and the glottal stop does not appear.

Unvoicing of the voiced nasal phonemes preceding unvoiced vowels also distinguishes terminal open juncture.

2. The phonemic syllable patterns are V, CV. The CV pattern is slightly more predominant than the other pattern. The unit of potential stress placement is equivalent to a single vowel—the following reverse clusters are evidence of this: éa, aé, eá, áe. Examples: péa *other*, baéso *down*, seáho *wild hog*, kiatáe *ugly*. All phonemic syllables are open and contain only one vowel. If

they contain a consonant it is initial and not more than one consonant to the syllable.

2.1. Relationship between phonetic and phonemic syllables.

The phonetic syllables are of the patterns V, VV, CV, CVV—which are all open patterns. These patterns do not coincide completely with the phonemic syllables above. The phonetic syllables with the pattern V or CV coincide with the phonemic syllables. The patterns VV and CVV are broken down into two syllables each on the basis of potential stress placement as stated above. The nucleus of the phonetic syllable may be a single vowel, a vowel cluster, or the syllable may be constituted of nothing but a nucleus. The point of phonemic syllable division is, therefore, often different from that of the phonetic syllable: éa *he*, éka *cane*.

The distribution of the two types of phonemic syllables is the same. Both types of syllables appear word initial, medial, and final: ešíwio *thin*, xíxiani *burning*, tóoxo *milk*, xešék^{w}i *buy* (*command*).

3. The word patterns are many and varied. The pertinent factors are: a vowel cluster of more than two vowels is not found within the word, all words end with vowels, and all words have one primary stress. The following examples illustrate the major patterns found in the language: VV, éa *he*; CVV, péa *other*; CV, xá *parrot*; VCV, óxe *river*; VCVV, etíi *captain or old man*; VCVCV, eyáho *above*; VVCV, eixá *basket*; CVCV, wíni *bee*; CVVCV, tóoxo *milk*; VCVVCVV, ek^{w}iadói *my brother*; CVCVCV, sinék^{w}a *afternoon*; CVVCVV, kiatáe *ugly*; VCVCVV, ešíwio *thin*; VVCVCV, eox^{w}áña *scalp*; CVCVV, mikéa *yours*; CVVCVVCV, kiaÑiéni *straight*; CVCVCVCV, pokiséwi *small black ant*; CVVCVCV, kiaMéti *afraid*; VCVCVCV, ekowíxi *bow*; CVVCVCVV, seahipóo *liar*; CVCVCVCVCVCV, hekíšixakani *a sigh or heavy breath of air*.

3.1. In Chama the consonants are of much more limited distribution than the vowels. The bilabial stop phonemes have a higher frequency of occurrence before the phoneme o than have the other stops. The phonemes k^{w} and g^{w} seldom occur before the phoneme o.

Since the consonant phonemes are found only in the initial positions of the phonemic syllables they may appear initially or medially in utterances and words. All consonants are found initially in phonemic syllables. All consonants are found initially, and all are found medially in words. All consonants appear before primary stressed vowels. y appears only before vowel clusters in initial position.

The following are examples of consonants in initial position: páxi *cried*, tóoto *uncle or father-in-law*, kiakémo *fat man*, k^{w}éči *domesticated pig*, béka *two*, déxa *man*, gámo *thick*, g^{w}éhi *thunder*, čahák^{w}i *go fish* (*command*), séwi *dirty*, šáni *right side*, xóxe *duck*, x^{w}anáakani *taking a spouse*, mái *moon*, nóe *meat or flesh*, ñíñani *scratching*, ŋók^{w}i *sit down* (*command*), Méti *fear*, Nóo *toadstool*, Ŋíčo *mouse*, hahák^{w}i *cut* (*command*), wapé *tree*, yíikohi *here*. The following are examples of consonants in medial position: epóna *female*, etíi *old man*, pókiani *going*, ek^{w}éa *mine*, bába *grandfather*, ek^{w}iadói *my brother*, gágo *hot*, eg^{w}anási *woman*, čóčo *head gear*, esé *tooth*, bišáwa *wasp*, xíxiani *burning*, eox^{w}áña *scalp*, mímiani *talking*, éna *blood or liquid*, iñawéwa *dog*, šapóoŋi *turtle*, kiaMéti *afraid*, eNíhi *bench*, kiaÑiéni *straight*, eŊáŋo *animal tail*, eíwi *rotten*, seahipóo *liar*, eyáho *above*.

3.2. All of the vowels occur initially and finally in the syllable and word. Examples initially are: iñák^{w}i *catch*, ekowíxi *bow*, áno *old woman*, óho *cough*. Examples finally are: béni *wind*, wapé *tree*, sinék^{w}a *afternoon*, ešó *child*. All of the vowels appear medially in the word. Examples: bíse *canoe*, bésa *to cross*, kiabámi *clean*, ekóxo *eye*.

3.3. Clusters of two vowels occur between phonemic syllables within the word. The cluster may consist of two identical vowels, or of a combination of any two of the vowels in any order. All of the possible combina-

tions of two vowels occur: ii, ie, ia, io, ee, ei, ea, eo, aa, ai, ae, ao, oo, oi, oe, oa. Examples: etíi *captain or old man*, esíe *papaya*, bía *you*, ehióxʷi *foot*, šihée *grain*, eíyo *hill*, péa *other*, ewéo *bald head*, páani *crying*, xái *fish*, baéso *down*, exáomi *plantain*, tóoxo *milk*, dói *brother*, xoé *species of parrot*, póani *coming*.

The sequences ei, ea, eo, ia, ie, io, ai, oi, and clusters of identical vowels may occur initially, medially, and finally. The sequences ae, ao, oe, and oa appear only medially and finally.

4. The i and e phonemes alternate. When a word of the VCeV or CeV form becomes subordinate to a nuclear constituent in the process of word formation the phoneme e is replaced by the phoneme i.

The phoneme i alternates with the phoneme y. When a stem that begins with iV receives a prefix of the V pattern, the phoneme y replaces the phoneme i. A stem that ends in Vi will have the phoneme i replaced by the phoneme y when it receives a suffix that begins with V: iá *arm*, eyá *human arm*, ekíi *house*, ekíyase *to the house*, ekʷéa *mine*, ekʷióšaxa *my knee*.

4.1. The primary stress phoneme alternates with the weak stress phoneme. When a free morpheme, that appears elsewhere as a full word with primary stress, becomes subordinate in a word construction the primary stress is replaced by the weak stress: ekʷéa *mine*, ekʷiaxó *my sister*.

A PHONEMIC ANALYSIS OF A DAKOTA DIALECT

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0.1. The informant's dialect
0.2. Phoneme list
1. Junctures
2. Consonants in non-geminated position
3. Glottalized consonants
4. Syllabic phonemes
5. Accented syllable
6. Consonant clusters

0.1. This paper is a phonemic analysis of a Dakota dialect, the material for which was acquired from an informant whose parents were Yankton speakers and whose school mates were mostly Teton speakers. Reuben Jacobs, the informant,[1] has lived for many years in English-speaking environments, paying occasional visits to Yankton-speaking communities. Since the time that Jacobs has lived apart from the reservation, an interesting change has taken place in his dialect. What must have been originally a free variation between Yankton and Teton forms in that portion of the phonology which distinguishes the Dakota dialects—the usage of [l], [d], and [n]—has, even though a choice has been made in many cases between the Yankton and the Teton forms, remained a phonemic unity, because the choice has been determined on phonological grounds throughout.

0.2. There are sixteen consonant phonemes in this dialect, b, t, c, k, s, š, x, h, ž, ž, g, m, n, w, l, y; eight vowel phonemes, i, e, a, o, u, į, ą, ų; one accent phoneme, /ˊ/; and three juncture phonemes, /–/ /,/ /./.

1.1. The junctures occur only at morpheme boundaries. /./ occurs at the end of sentences and is a pause of at least one mora. /,/ occurs in sentence medial position and is always a pause of one mora. /–/ occurs in sentence medial position[2] and represents an intermittently-present pause of varying length up to one mora. Between like consonants, /–/ has no length; and the consonants join to form one long consonant, unvoiced in the case of stops. In other positions it usually, but not always, has some length, more in slow speech than in fast and more when the previous juncture is /./ than when it is /,/.

/šų́k-kaštáka/ [šų́k: ʀštàkà] *he whipped the horses*; /hą́b-bahí/ [ą̀ą̀p:aį̀ì] *he collects moccasins*; /owį́š-šì/ [ʔo̯u̯į́š:ì] *he ordered him to put it down*; /lé-ą́bétu-kį, líla-kxátįkta. [lé-ʔà̀petu-kɪ-líla-kˣa̋tɪktà ⁂] *It will be warm today*. Hereafter, the phoneme /–/ will be indicated by an empty space.

2.0. The following is a discussion of the consonant phonemes in non-geminated position.

2.1. /b/ [b] before /l/, initially before /ó/, and in final position after oral vowels; [m] in final position after nasal vowels; [b] ~ [p] before /á/; otherwise, [p] before accented vowels except when following

[1] I would like to thank both the American Philosophical Society for providing me with informant funds and Reuben Jacobs for his constant cooperation and interest.

The following symbols are used in this paper with somewhat unusual meanings: ʀ indicates a strongly retroflexed a, as in English *arc*. p̓, t̓, k̓ indicate glottalized p, t, k, respectively. Italicized print indicates lenis pronunciation; boldface print indicates fortis pronunciation.

[2] At this point it seems possible to describe the positions of the junctures on morphological bases. /./ occurs after verb forms and after certain post-verb particles. /,/ occurs before the object, if there is one; otherwise, it occurs before the verb. It also occurs in other as yet undefined positions. /–/ occurs in all post-free-form positions where the other two junctures do not occur. If the positions of /,/ can be defined, the three would then constitute a single juncture phoneme.

initial /k/. Initial /kb/ before /i/ is a single stop with simultaneous labial and velar closure; before other vowels, it varies between this and [kp]. Before /a/ and the nasal vowels, the sequence of two stops is much more frequent. Elsewhere, /b/ = [p]. /bluhá/ [b.luə̯á] *I have*; /bóga/ [bóɣà] *nose*; /ąbétu/ [ʔą́pétu] *day*; /kbíga/ [xiɣà] *he awoke his own*; /wakbála/ [ɢàkpą́là] *creek*; /cxáb síte/ [tˢʰą́b-sɪ̯te] *beaver's tail*; /háb íbatxa/ [ə̯ą́m-ʔìpątˣà] *embroidered moccasin*.

/t/ = [t] ~ [θ] after /b/; [d] initially before /ó/ and in final position after oral vowels; [t] before accented vowels; [n] in final position after nasal vowels; [ţ] after /š/; [ţ] ~ [t] before /x/; [t] elsewhere.[3] /ųyábtelo/ [ʔų́ąpθᴇlo] ~ [ʔų͡ą́ptᴇlo] *we will go*; /tókša/ [dókšà] *maybe*; /táku/ [tą́ku] *something*; /mitxáwa/ [miţˣą́ɢą̀] ~ [mitʰą́ɢą̀] *mine*; /ąbét hí/ [ʔą̀pé̯d-i̯ì] *he comes by day*; /cxą́t waštέ/ [tˢʰą́n-ɢʀštè] *happy*.

/c/ = [tˢ]. /cxíca/ [tˢʰítˢà] *young*.

/k/ = [ç] (a prevelar, voiceless spirant with spread lips) ~ [k] after /i, i̯, u, ų/ before stops; [g] before /m, w/ and [l, d], and in final position after oral vowels; [ŋ] in final position after nasal vowels; [k] before accented vowels; [k] elsewhere. /mánikta/ [mą́niçtà] ~ [mą́niktà] *he will walk*; /ųktébi/ [ʔɪ̯çtépi] ~ [ʔɪ̯ktépi] *we died*; /ikmú/ [ʔig.mú] *cat*; /klužáža/ [g.luž́ąžà] *he washed his own*; /sók yá/ [sóg-ɢ̯ą̀] *he loaded it*; /sųkáku/ [sɪ̯ką́ku] *younger brother*; /wàyąk hí/ [ɢą̀ą̯ą́ŋ-i̯ì] *he came to see it*.

2.2. /s/ = [s]. /ska/ [skà] *white*; /slolyá/ [slol.ɢ̯ą̀] *he remembered*.

/š/ = [š]. /miš/ [miš] *me, too*; /yútašni/ [iútʀšni] *he didn't eat*.

/x/ = [x], except after stops. /bx/ = [pˣ] ~ [px]./tx/ = [tʰ] ~ [ţˣ]:[tʰ] is more frequent before high vowels and [ţˣ] before low vowels. /cx/ = [tˢʰ]. /kx/ = [kʰ] ~ [kˣ] ~ [kx]:[kʰ] is most frequent and [kx], least, /xóta/ [xótà] *grey*; /cxą/ [tˢʰˑ] *wood*; /txi/ [tᵇi] ~ [ţˣi] *home*; /akxé/ [ʔàkʰé] ~ [ʔàkˣé] ~ [ʔàkxé] *again*.

/h/ = [ʔ] in final position. Before vowels, /h/ is a voiceless vowel of the same quality as the following vowel; it is nasalized before nasal vowels; and intervocalically before an unaccented vowel it varies freely with its voiced counterpart, i.e., with a lengthening of the following vowel. /he/ [e̯e] *that*; /uh/ [ʔu̯ʔ] *he came*; /wąkáheža/ [ɢą̀ką́ᴇ̯ᴇžà] ~ [ɢą̀ką́ᴇ:žà] *child*.

2.3. /z/ = [z]. /zi/ [zi] *yellow*; /nuzá/ [nuzą́] *it is soft*.

/ž/ = [ž]. /ži/ [ži] *blonde*.

/g/ = [ɣ]. /gi/ [ɣi] *brown*; /kága/ [ką́ɣà] *he made it*.

2.4. /m/ = [m]. /mni/ [mɪní] ~ [m.ni] *water*.

/n/ = [n].

2.5. /w/ nasalized before nasal vowels; ų after /u, ų/, after /k/ before /u, ų/, and before /i, i̯/; ɢ elsewhere. /txáwa/ [ţˣą́ɢą̀] *his*; /úwo/ [ʔʊɢo] *come!*; /wóyuta/ [ɢóü̯ utà] *food*; /kwu/ [g.ɢʊ] *clean*.

/l/ = [d] after /x/; [l] ~ [n] before final /a/, except after /x/; and in a syllable before one in which [l] ~ [n], in which case the same allophone is used in both occurrences of the phoneme; [d] ~ [l] ~ [n] before nasal vowels, except after /x/ and in those cases where [l] ~ [n], as explained above; [d] ~ [l] elsewhere. /blo/ [b.lo] ~ [b.do] *potato*; /xla/ [xda] *rattle*; /le/ [le] ~ [de] *this*; /líla/ [lílà] [nínà] *very*; /klɪ̯kta/ [g.lɪ̯çtà] ~

[3] The reasons for phonemicizing final [m, n] as part of the /b, t/ phonemes, respectively, are both comparative and morphological. All stems end in -CV. Some stems ending in /a/ lose this when they are the non-final members of compounds. In all cases where /a/ is lost, the preceding consonant is a stop or a spirant in the full form; but it undergoes phonetic changes when the /a/ is dropped; i.e., [p, t, k] are replaced by, respectively, [m, n, ŋ] after nasal vowels and by [b, d, g] after oral vowels; and [z, ž, ɣ] are replaced by [s, š, x], respectively. This is subject to the limitations described in paragraph **1.1.** Since [m, n] do not otherwise occur in this position, and since [p, t] do not occur here, it seems advantageous to make this phonemic analysis. /hábà/ [ə̯ą́pà] *moccasin*; /háb íbatxa/ [ə̯ą́m-ʔìpątˣà] *embroidered moccasin*; /wąyąk/ [ɢą̀ą̯ą́kà] *he saw it*; /wąyąk hí/ [ɢą̀ą̯ą́ŋ-i̯ì] *he came to see it*; /kága/ [ką́ɣà] *he made it*; /káx hí/ [ką́x-i̯ì] *he came to make it*.

[g.dʃçtà] ~ [knɪçtà] *he will go home*; /cxícala/ [tˢʰítˢàlà] ~ [tˢʰítˢànà] *young*; /hel/ [ɛ̨ɛl] ~ [ɛ̨ɛd] *in that.*

/y/ is nasalized before nasal vowels. It is a falling, unrounded semi-vowel, beginning slightly higher and slightly more forward than the following vowel, in initial position, after consonants, and between like vowels. /ɨy/ = [ɨ̃:] before nasal vowels. /yɨ/ = [ɨ̃:] before consonants. /iy/ = [ⁱi] ~ [i̯·] initially before an accented vowel. Between other sets of unlike vowels, /y/ is an unrounded glide between the two vowels. [ɨ̃:] is the only accented long vowel in the language (see /h/), and it does not occur before oral vowels. [ɨ̃] is the only accented vowel which does not occur after the unrounded glide or before the glide plus a nasal vowel. Therefore, the length of [ɨ̃:] is phonemicized as an allophone of /y/. The order of the sequences of /i̯/ and /y/ is determined by the order of any other vowel and /y/ in the environments cited.[4] /ɨyąka/ [ʔɨ̃:ą̀kà] *he ran*; /yɨ́kta/ [ɨ̃:ç̣tà] *he will go*; /oyáka/ [ʔoe̯ą́kà] *he spoke*; /iyúhala/ [ⁱi̯úą̀ą̀là] [i̯·úą̀ą̀là] *all*; /okíyaka/ [ʔokíi̯ą̀kà] *he told it.*

3.0. The glottalized consonants and the vowels following them are very tense. In the case of the glottalized stops, except glottalized c, the glottal closure occurs simultaneously with that of the stop closure and the two closures are released together. In the case of the glottalized spirants and glottalized c, the glottal closure does not begin until the spirant is nearly or wholly completed; and it always continues for a mora afterwards.

3.1. /bb/ [ṗ]. /bbo/ [ṗo] *foggy*; /nibbózeca/ [niṗózɛtˢà] *you are irritable.*

[4] There are morphological considerations for this phonemicizations as well. There is a causative suffix with the allomorph /yą/ after nasal vowels. [špą̀] /šbą/ [špą̀ą̨ą̀] /šbáyą/; [kɨ̨ɪ] /ksi̯/ [kš̩:ą̀] /kšíyą/. Before /kta/, a future suffix, some /a/'s are replaced by /i̯/'s. [ą̀ką́] /yaká/ [ą̀kɨ̨ç̣tà] /yakɨ̨kta/; [ą̀ą́] /ya/ [ʔɨ̃:ç̣tà] /yɨkta/.

/tt/ [ṫ]. /wakátta/ [o̯ąkáṫą̀] *I killed it*; /ttɨ̨kta/ [ṫɨ̨ç̣ta] *he will kill it.*

/cc/ = [tˢʔ]. /kíccu/ [kítˢʔu] *he gave his own.*

/kk/ = [q̇] ~ [q]. The point of articulation of this glottalized stop is postvelar, or pharyngeal, whereas that of /k/ is mediovelar or prevelar. /kka/ [q̇ą̀] ~ [qą̀] *and*; /kikkú [kiq̇ú] ~ [kiqú] *he gave it to him.*

3.2. /ss/ = [sʔ]. /ššа/ [šʔą̀] *it roared*; /yatkéssa/ [ą̀ą̀t.késʔą̀] *he is always drinking.*

/šš/ = [šʔ]. /ssa/ [sʔą̀] *he shouted*; /wassá/ [o̯ąsʔą́] *I shouted.*

/xx/ = [xʔ]. /xxąhí/ [xʔą̀i̯í] *slow*; /oxxą́ko/ [ʔoxʔą́ko] *quick.*

3.3. The reasons for phonemicizing the glottalized consonants as geminates is because they fill out the table of possible consonant clusters; and they occur in the same positions, and as frequently, as do other clusters.

4.0. The following is a discussion of the syllabic phonemes. There are a few features which all vowels have in common: between /C-/ and /V/, a glottal stop always occurs; before other initial vowels and between vowels, a lax glottal stop occurs; and after geminate consonants, vowels are very tense.

4.1. /i/ = [i] ~ [ɪ] when unaccented in final position; [ⁱ] when unaccented before /c/ and medially before /yṼ/, except after geminate consonants; [ⁱ] ~ [ⁱ] initially before /yṼ/ (see /y/); [ɪ] after the accent, except after geminate consonants; [i] elsewhere. /kicí/ [kⁱcí] *together*; /ocxíciyaka/ [ʔotˢʰítˢᴵɪą̀kà] *I told you about it*; /tóhila/ [dóɨ̯ɪlà] *sometime* (see /h/).

/e/ = [æ] before /ya/; [ɛ] in closed syllables and medially after the accent, except after geminate consonants or before /ya/; [e] elsewhere. /eháni/ [ʔeą̀áni] *when* (interrog.); /kkéyaš/ [qæ̨ɛ̨nš] *but*; /úktešnih/ [ʔɪ̨çtɛšnɪʔ] *he will not come*; /ą̨bétu/ [ʔą́pétu] *day.*

/a/ = [ą̀] after geminate consonants; [ʀ] before /š/, except after geminate conso-

nants; [å] elsewhere. /kkaš/ [q̊æš] *even if*; /wašté/ [ǫʀšté] *good*.

/o/ = [o] after /w/; [o] elsewhere. /úwo/ [ʔúu̯o] *come!*; /úyelo/ [ʔuɪ̯ɛlo] *he came*; /matxó/ [mȧtˣó] *bear*.

/u/ = [ʊ] before /w/ and after /kw/; [ɪ̈] before [ç]; [ɪ̈] ~ [u] before [k]; [u] elsewhere. /híyuwo/ [ɪ̈íɪ̯ʊu̯o] *go away!*; /kwu/ [g.u̯ʊ] *clean*; /úkta/ [ʔïçtȧ] ~ [ʔuktȧ] *he will come*.

4.2. /i̯/ = [i] after geminate consonants, except before the nasal allophones of /b, t, k/; [ɪ] after the nasal allophone of /l/, and before the nasal allophones of /b, t, k/, except after geminate consonants; [i] after geminate consonants before the nasal allophones of /b, t, k/; [ɪ] elsewhere (see /y/). /txíki̯/ [tʰíkɪ] *the home*; /ttíkta/ [t̪íçtȧ] *he will kill it*; /klíkta/ [knícȟtȧ] ~ [g.líçtȧ] *he will go home*.

/ą/ = [å] before the nasal allophones of /b, t, k/ and after the nasal allophone of /l/; ą elsewhere. /waɣą́khí/ [o̥å̯ǽã̯ŋ-i̯̊i̯̊] *he came to see it*; /híhąna/ [ɪ̥íå̯å̯nå̯] *tomorrow*.

/u̯/ = [u̯] after geminate consonants, except before the nasal allophones of /b, t, k/; [ʊ] after the nasal allophone of /l/ and before the nasal allophones of /b, t, k/, except after geminate consonants; [u] after geminate consonants before the nasal allophones of /b, t, k/; [ɪ̈] before [ç], except after geminate consonants or the nasal allophone of /l/; [ɪ̈] before [ç], after geminate consonants; [ɪ̈] before [ç], after the nasal allophone of /l/; [ʊ] elsewhere. The rounded and unrounded allophones of /u̯/ vary freely before [k]. /ttúk yá/ [t̪úŋ-æ̀à] *he suspected*; /kku̯/ [qu̯] *the former*; /u̯yą́bi/ [ʔu̯å̯pi] *we went*; /mánu̯kta/ [mã́nɪ̈çtȧ] [mã́nɪ̈ktȧ] ~ [mã́nʊktȧ] *he will steal it*.

5.0. There is one accented syllable for each free form in the language. On a purely phonological basis, the position of this accent is phonemic.[5] /ˊ/ = [ˈ] when it follows /-/; [ˊ] elsewhere.

[5] It seems probable that the position of the accent can be described on a morphological basis.

6.0. The following two-consonant clusters occur in initial and medial positions; (x) indicates that this cluster does not occur initially:

	b	t	c	k	s	š	x	m	n	w	l	y
b	x	x	x		x	x	x				x	
t		x		x			x					
c			(x)				x					
k	x	x	x	x	x	x	x	x	x	x	x	
s	x	x	x	x	x			x	x	x	x	
š	x	x	x	x		x		x	x		x	
x	x	x	x				x	x	x	x	x	
m									x			
l											(x)	(x)

6.1. Two-consonant clusters that begin with a nasal or a liquid and those that begin with a stop and end with a nasal or a liquid, except /kn/ and the [kn] allophone of /kl/, have open transition without any break in voicing between the two consonants. When the cluster /mn/ occurs before /i/, this voiced open transition varies freely with the full vowel [ɪ], with [ɪ] being the more frequent when the cluster is initial or immediately before the accent. /mni/ [mɪní] ~ [m.ni] *water*; /*yamni*/ [æ̀á̯m.ni] ~ [æ̀á̯mɪni] *three*. The transition in the cluster /tk/ varies freely between open and closed. /yatká/ [æ̀å̯t.ká] ~ [æ̀å̯tká] *he drank it*. All other clusters have closed transition.

6.2. One three-consonant cluster occurs, with a morpheme boundary separating it. /yábšni/ [æ̀á̯p-šni] *they didn't go*.

In short: if the stem without affixes consists of one syllable, the accent goes on this stem if there are no prefixes, but on the second syllable if there are one or more prefixes. If the stem consists of two syllables, and if, when it is without prefixes, it remains there regardless of the number of syllables which are prefixed to it; but if, when without prefixes the accent is on the second syllable, then it goes on the second syllable of the complete form when prefixes or infixes are added. Superordinate to these rules is the fact that a few prefixes always take the accent. /kkú yakkú mayákku/, but /wáyakku/; /yaká oyáka okíyaka oyákiyaka/, but /wóyakiyaka/; /i̯yą yaɪ̯ną yakiɪ̯ną/, but /wáyaɪ̯ną/.

CHEMAKUM LEXICON COMPARED WITH QUILEUTE

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0. Introduction
1. Suffixes
2. Stems

0. The Chemakuan Stock consists of two languages, Chemakum and Quileute. The first of these became extinct some years ago, but is to some extent preserved in writing, particularly in field notes obtained by Franz Boas in 1890 from one of the last three people who spoke the language. Another important item is a vocabulary recorded by George Gibbs, probably some years prior to Boas' work. As to Quileute recent reports[1] are that a few speakers are still alive. Of already recorded lexical material, the best and most complete record is the vocabulary file of Manuel J. Andrade, incorporating his own material with that of Leo Frachtenberg. All three documents—Boas, Gibbs, Andrade—are preserved in the Franz Boas Collection of the American Philosophical Society Library,[2] which has kindly made them accessible for study. This circumstance has made possible the compilation of the present vocabulary of Chemakum together with Quileute cognates. Since these two languages are the only members of the Chemakuan Stock, the cognates given here represent essentially the total number of elements traceable to the common period of Chemakuan. Thus we have here what amounts to a Proto Chemakuan lexicon and the material for the reconstruction of prehistoric Chemakum and Quileute phonological developments.

Chemakum and Quileute are close enough together so that there has never been any doubt of their genetic unity. Nevertheless, they are by no means mere dialectal variants but mutually unintelligible languages. Perhaps a third of the entries in our Chemakum list have recognizable Quileute cognates. In a test list restricted to fundamental vocabulary, the percentage of agreement is higher, as is to be expected. The agreements, amounting to 41 per cent, suggest that the two languages have been diverging about 21 centuries.[3]

The comparison of Chemakum and Quileute leads to the following reconstruction of Proto Chemakuan phonemes: i a u, ʔ h y w, p ṗ m, t ṫ n, ƛ̓ ɬ l, c ć s, ч ч̣ ʃ, k ḵ x, kʷ, ḵʷ xʷ, q q̣ χ, qʷ q̣ʷ χʷ. The Quileute system is identical except that b and d replace m n. The Chemakum lumps the original ч-series with the c-series, but creates a new ч-series from k ḵ x. It also converts original y into ч as a normal development, but y remains in the demonstrative, in syllable final position, and in some other cases not yet reducible to rules. Similarly Chemakum converts original w to kʷ, but has two instances of initial w in sound imitative words (wacwac *bluejay*, waaq̣iiq̣ *frog*), syllable final w, and a few other instances. Vowels generally agree in the two languages but evidently some original short vowels have been lost in Chemakum and some vowels seem to have changed in quality

[1] Information of Leon V. Metcalf of Seattle.

[2] Franz Boas, Chemakum materials; George Gibbs, Chemakum vocabulary; Manuel J. Andrade, Quileute vocabulary. Important published works include Boas, Notes on the Chemakum Language, American Anthropologist 1892, pp. 37–44; Andrade, Quileute, pp. 149–292, Handbook of American Indian Languages, New York 1933–38; Andrade, Quileute Texts, Columbia University Contributions to Anthropology vol. 12, 1931; Andrade, Notes on the Relations between Chemakum and Quileute, IJAL 19.212–15 (1953).

[3] For the technique of estimating time-depth see my Lexico-Statistic Dating of Prehistoric Ethnic Contacts, APS-P 96.452–63 (1952).

perhaps under the influence of neighboring consonants or the vowels of adjoining syllables. There is also evidence of transposition of vowels and syllables in one or the other language according to at least partially consistent principles. Examples of disparity in vowels and of transposition: Q ɬaaч, C ɬiчa- *know*; Q kaniinu?, C чinaanu *dog*; Q diidu?us, C nanu?u *bird*; Q li?baa?t, C maalii- *sleep*; Q disuusit, C simuusit *nose*; Q siiba?a, C masa *smell*.

The phonetic symbols used here are taken from recent usage, departing in some instances from Boas' practice. Generally a simple substitution was possible of the new symbol for the old. However, where Boas wrote tl usually and l' occasionally, it seems evident that the voiceless lateral ɬ was the actual sound. Also Boas occasionally used a modified q, which should represent something different from his plain q (explained in Notes on the Chemakum Language as equivalent to ch in Scotch loch). Because of inconsistencies in his record, it was decided to replace q with modern χ in all cases unless comparison with Quileute indicated that x (or, in the labialized form, x^w) was involved. The value of the symbols will be readily apparent from their place in the list given above, but a few explanations may be added. The letter c stands for sibilant affricate (ts), ч for the shibilant affricate (English ch), ƛ̓ is the lateral affricate glottalized. Long vowels are shown for convenience by double letters.

In his paper, Notes on the Chemakum Language, Boas describes his Chemakum data as consisting of "about 1,250 words, grammatical forms, and sentences, which were all corroborated by repeated questioning." Separate recordings of the same word in different phrases permit a check of Boas' consistency, and Quileute cognates, where they exist, give another test. The conclusion is that he had by that time solved some but not all of the problems of Northwest Coast phonetics. His record of glottalized consonants is very nearly perfect, except that he uses two different devices for noting it (apostrophe, wedge-shaped diacritic, or both). He distinguishes mid-palatal and back velar stops (k versus q) with only occasional presumable errors in the position before vowels, but he is inconsistent in the position before consonants. In the latter position he only occasionally catches labialization—possibly the phonetic type was not very common in Chemakum. As to the back spirants, two symbols are used (q and very occasionally a modified q) but there is inconsistency in the same word; one might guess that he was beginning to note a difference but had not yet crystallized his observation. He seems to be fairly good but not fully consistent in noting long vowels. Glottal stops he does not write at this stage, but his record sometimes reflects them by double vowel letters (that is, aa represents a?a or a?). Non-syllabic vowels are written the same as syllabic vowels, thus creating an ambiguity in such a writing as ae, which may represent either a?i or ay.

Gibbs vocabulary is valuable for corroborating the existence of the Chemakum element, as against Clallam words which occasionally come into Boas' material. Gibbs also has some words which do not appear at all in Boas. However, phonetically, the Gibbs vocabulary gives only an approximation in English spelling.

Andrade's Quileute reflects the better understanding of Northwest Coast phonetics which had been achieved by his time, but his record is not perfect. In 1938 Andrade indicated to the present writer that he was not entirely satisfied with his record, saying that he wanted to return to the field to check phonetics. Unfortunately this did not come about. As it stands, the record indicates all the essential distinctions but shows some vacillation between long and short vowels and between x and χ, also occasionally final labialization seems to be omitted. Where Andrade's vocabulary contains words recorded only by Frachtenberg (marked L.F.), the phonetic reliability is much less.

In the presentation of Boas' Chemakum material, the forms are given in a normalized phonemic writing which resolves some of the inconsistencies and applies a pattern conception to some of the unnoted distinctions. This treatment can be expected to give accurate simplification in almost all cases, but has to be used with caution. If one bears in mind the direction of normalization, one will know where inaccuracies are most likely to be found.

We assume that Chemakum had no k-series as such, but only a labialized k^{w}-series and the back q and q^{w} series. If k is written before the vowel u, we assume that it is k^{w}u. The very rare cases of k before a are assumed to be for q, but it is conceivable that Chemakum had developed a new k-series after losing the original Chemakuan k-series. Thus the only three cases of recorded initial k—ƙatiin *small*, ka?ax^{w}uliitis *grandchild* (Quileute qaxuulit), ƙaaƙina *crow*—might conceivably represent a diminutive symbolism applied to q. Syllable final k has been interpreted as q in accordance with the best general evidence, however it is conceivable that in a few cases k^{w} may be involved. Front x^{w} has been written only where a Quileute cognate is so reported, but the Quileute itself may be in error, as already explained. No attempt has been made to normalize vowel length and the glottal stop except that a word recorded once with and once without the glottal stop is assumed to have it.

No real normalization has been attempted in the Quileute forms. Actually, the Chemakum can sometimes be used to correct the Quileute. Thus, if Chemakum has ʃ and Quileute χ, the latter must be an error for x; conversely, if the Chemakum has χ and the Quileute x, the latter must be a mistake for χ.

Abbreviations used here are Q for Quileute, B for Boas, G for Gibbs. (B.G.) means that the form is given by both sources. Where no source is given, the word is found only in Boas.

1. Suffixes.

-(i)s *my*. Q -s.

-(i)c *thy*, -c *thou*, -icał *you* (pl.), -ca- *thee*. Q -ч *thy, thou*.

-χis *his*. Q -ya?as *his*, s subjective nonfeminine pronoun *he*.

-?ii, -?iχ *he*.

-?ay *they*.

-чuk^{w}s *her*, -?uk^{w}s *she*. Q -ya?aks *her*, -aks *she*. Proto-Chemakuan probably with rounded -k^{w}-.

-ча?as *their*. Q ya?as *his*.

-ѵq^{w} *our*. Q -ƚuq^{w} *our*, -q^{w} *we*.

-stiч *your* (perhaps read -ctiч). Q -чtik *your*, -ka *you*.

-la, -lii *I*, sometimes *my*. Q -li *I*. C -ƚii occurs evidently as a contraction product with some stem finals.

-ima, -ma *we, us*. Q luba?aa *we*.

-k^{w}u- voice element used for third person with relation to first or second person subject.

-tχa-, -tχal reflexive. Q -sqal- is not comparable phonologically.

-tila- transitive. Q -tila-.

-at- interrogative.

-k^{w}ii- future.

-sim-, -lim- past.

-tuu- used in connection with future, e.g. qacuu-k^{w}i-la cuu?u-tuu *bye and bye I shall go*.

-inak^{w}si *upper part of arm*. Q -dusq^{w}ay *elbow*.

-ins *dogs, domestic animals* (used with numerals).

-iiчii *belly*.

-iiqaч *heart, feelings*. Q -tqa?yił *to be one's purpose, to intend*. Boas -iiχaч

-ałsii *to look*. Q -qał.

-aѵit, -?acat, pl. -aćaayt *blankets* (with numerals). Q -ćay *blanket, bed covers*, -ća *to dress, have clothes on*.

-uus *nose*. Q -us.

-?ilt *thing* (in a few nouns).

-?aćit *river*. Q -ći *water*.

-pat *plant*. Q -pat *plant, bush, tree*.

-t *thing*. Q -it.

-tiiya, pl. -ta *days*. Q -t *days*, -qtiya? *sun*.

-tiʏuu *houses*. Q -tiyuł *village*, -tii *dwelling, indoors*.

-tquluu *language*. Q -sq̓ʷa *to speak a language*, -sq̓ʷa? *language*.

-ɬiłuu?a *moons, months*.

-ɬiiqʷ, -ɬit *head*. Q -ɬii(qʷ) *head*.

-ɬa *ear*.

-ɬał- *want*.

-ɬaʏ, -ɬaʏi-, -ɬaʏt *hand*. Q -ɬay *hand, twig, branch*.

-suu?u- in ɬaq-suu?u-t *roof*. Q -su- *roof*.

-ns in ɬq̓ʷins *skin*. Q -dis *skin, hide*.

-ɬiina *berry*.

-ɬiigu?a *point*. Notes on Chemakum.

-nχu *foot*. Perhaps cp. Q -dask *leg, foot*.

-ɬimi-t *trails*. Q -ɬib *road*.

-ɬuu *face*. Q -ɬ *face*.

-lisim *face*.

-luu?uχq̓ut *leg*.

-camɬuu-, -camɬi- *breast*.

-ćiła *lower part of leg*. Q -q̓ili *foot, leg*.

-spa *fire*. Q -sp.

-ʏił *made with*.

-ʏisii-t *dollars*.

-ʏat *trees*. Q -ya *tree, log*.

-q̓a?a *ear*.

-kʷanu-t *finger*.

-kʷuu *canoes*. Q -ku *river canoe*.

-quł, -tquł, -qʷł *instrument*. Q -quł *tool, instrument, utensil, artifice*.

-qcil, pl. -aqal *persons in canoe*. Q -qal *canoe mate*, -qas *friend*.

-q̓ink ʷ *back*. Perhaps cp. Q -q̓ʷaay *pack carried on back*.

-q̓uu *mouth*.

2. Stems.

?iitii?iʏt (qʷaaqʷayii) *all are (hungry)*.

?inχaɬiqa *Tlokwala, Wolf ritual*.

?iilaq̓uu *salmon*. Cp. Q ?iilaqsi *silver side salmon*.

?ilaχaal- *to leave*. Q ?i?laχa? *leave, abandon, let go of*; also cp. Q -xal *gone, lacking, missing*.

?iluχa?a *heavy beams of roof*.

?ilʏicuukʷuuł-ɬi (?aa?il-tuu) *now I go (to eat)*. Q ?ii?la?asa?a *and now*.

?iisa- *many, much* (BG), ?iisa-stiʏi- *often*. Q ?iʃ *many, much*.

?iiq̓ʷasqaʏi *to sweep*, ?iiq̓ʷasqaluu-qʷł *broom*, ?iiq̓utχaatqa-la *I clean canoe*, ?iiq̓uuhuu?ii-la *I clean canoe*. Q ?iiq̓ʷal *to sweep*, ?iiq̓uuću-quł *broom*.

?a?ilama *wave*.

?aa?ap-sin?i-t *to swim (fish, man)*, ?aa?aχ-sin?i-la *I swim*.

?aa?asuut *dentalia*.

?aa?aʃit *mountain* (BG). Q ?a?axit.

?amaa?as, pl. ca?ama?as *grandparent*. Q ?aba?a?.

?aaɬiil *shaman*.

?aala-χa- *to eat* (BG). Q ?aala.

?alaʏawχus *walk* (G). Q la?uu.

?aalii?is, pl. ?aa?al?is *elder sibling*. Q ?aalis *blood relative*.

?aliw-, ?aliikʷa?a- *make (blanket, house)*.

?aliiluu *salmonberry*. Q ?aliila.

?allaaq̓ʷa *naked*, ?alaaq̓ʷa-tχal *to put off blanket*. Q ?alaaq̓ʷa?.

?actii?a *night* (BG). Q ?awii.

?acɬii-tχa-la *I uncover face*.

?aaćit, pl. ?aaćiituu *chief* (BG). Q ?aaʔit *master, chief*.

?aaćinis-ɬt *wolf* (BG).

?aaćiʃ *when?* Q ?aać.

?aasił *stow (?) of salmon*. Translation illegible.

?asuqła, ?asuqłaa?aʏi- *hungry*.

?aaʔis *what?* Q ?aɬis.

?aaʔis?is *sweetheart*.

?aaʔaan *fishbasket*.

?akʷaʏuu?us, pl. ca?antuu?as *husband's sibling*.

?aakʷutqat *small fishing canoe*. Q ?aaluutq *canoe for sealing*, -tq *sealing canoe*.

?aqsqaa?il-ca *what are you doing?*. ?aqsqaalii-ca *what did you do?* Q ?asaq- *do what?*

?aχas- *eat*. Q -xa.

?aaχu *sit* (G).

?aχucuu *far* (BG).

?aχuuquluu *Chemakum*.

?aaχʷa?an *rainbow*.

?uuɬii-, ?uuɬiiqa?a, pl. ?uu?uɬuuχqa?a *house* (BG). Q ?uuɬ.

?uuʏuu *that* (G), ?uuʏaaχu *this* (G).

ʔuuq wa *no* (G). Q wa.

ʔuuqisiina *mother* (G). Cp. hiina.

ʔu hu piiɬit *today* (G).

hii(ʔi)- general stem, illustrated in the following entries.

hiiʔiʔil *boat, stem*, hiiʔi-tiiʔi-la *I go aboard*, hiiʔitkʷaqsχaa-la *I carry load in canoe*, hiiʔiluutii- (*their, your*) *canoe*, hiiluulaqɬ, pl. ciluuliqɬ *canoe* (BG).

hiiʔiɬ *he, they*. Q hii- *to be*.

hiiʔiɬiilit *cedarbranch rope*. Perhaps cp. Q -ɬaɬ *grass, hay*.

hiiʔiɬaaʔilt *dorsal fin*.

hiiʔiʃɥit *wing*. Q hiiʔiskiyit *wing*, -ski *feather, wing, gill*.

hiiʔiqʷaɥis *nape*. Perhaps cp. Q -q̓us *neck*.

hiiʔuqsit *knot in tree, branch*.

himʔuu *pigeon* (BG). Q hiʔiib, Clallam hmmu.

himhiim *grouse*.

hiinis *friend* (G). Perhaps cp. Q hiiqsiʔit *companions, fellows, brothers*.

hiina, hiinii- *father* (BG), *parent* (B Notes), hinʔikʷaasiɬis *step parent*. Q hiida? *father*.

hii-naqsi-t *arm* (G).

hiiɬilat *leaf* (G).

hiɬtuu *tongue* (BG). Q -ɬiliʔtuʔ.

hiicχaaʔal-ɬii, pl. cicχaaʔal-ɬii *my cousin*. Perhaps cp. Q hiiclil *brother-in-law, son-in-law*, hiɥiiyuulit *house-mate*.

hiɬistaaɥiɬ *plank*, hiicɬiisnuuʔut-qʷɬ *saw*.

hiɬa-tχa-la *I put on blanket*. Q hiɬat *clothes*.

hiiɥuuɬuut *heel*. Q -kili.

hiiqstii-ɬiim *my relations*. Q hiiqsiʔit *brothers, companions, canoe mates*, hiiqɬuwataʔ *woman's relatives*.

haaʔaʔa *fog*.

haaʔamaaʔa *short*.

haaʔastuu *cheap, easy*.

haaʔaʃiti- *buy*.

haawi-spii-ci-lii-la *I throw it into fire*, hawii-sina *to fall into water, be drowned*, hawi-sina-la *I go down to water*.

hawacqa, pl. hahawacqa *deer* (BG). Q hawayiʃka.

haɬilii-la *I cover*. Q haɬi-spiis *to spread over fire*.

haamaʔa, pl. cahaamaʔa *tree* (BG). Q haʔbaaʔ *tree, log*.

haaɬiɬila *hit*.

haɬiɥislu *good* (G), haɬiikʷaa-la *I am no more angry*. Q haɬ *good*.

haaɬiqs *sand*.

hakʷuɬ *near*, hakʷuu *come* (G). Q haakuɬ *near*, hakuu- *come*.

haɬaaʔa-la *I am tired*.

haɬastiɥi-la *I try to make*.

haɬaaɬʷa-la *I scold*.

haɬu-lii *I pack*, haɬu-qʷɬ *basket strap*. Q haɬuu, haɬʷaʔ *to pack*.

haχaalil *breath*, haχalica *breathe*. Q haχaatil *breath, wind*.

huu plural *the*, huuχ piiɬit *today* (BG).

huuʔupisti-la *I find*. Cp. huupaʔa- *to see*.

huuʔuɬaɥiil *ghost, dead one*. Perhaps cp. Q -ɥu *deceased*.

huuʔuqʷaqlim *he runs away*.

huuʔuqɬis, pl. cuuhuuqɬtuuʔas *daughter-in-law, brother's wife*, G hulquɬ *son or daughter*. Q huuqɬ *daughter-in-law*.

huuʔuqʷastiiɥii-ʔii (χaɥaʔa) (*the ice*) *melts*.

huuyaɥi-la *I have finished*, huuyaɥila piiʔilaʔis laqcuuʔutuu *when I am done talking, then I go*. Q huyi *only, just*.

huupit *soot on house*.

huupaʔa- *see* (BG).

hukʷaciisnit *feathers* (G). Cp. Q hukʷɬat *blanket*.

yi *the* (in possessive and relative constructions): yi ʔuuɬ-ɬii *my house*, taqiin yi ɬisuqli-c *what is thy name?* taqii yi ɥiiʔilaatila *who helped thee?* yicyaaya *my friend absent*, yic qiiʔiχtin *my sister absent*. Q yiχ non-feminine *the*.

yisqiiʔi tuχχiɥi laamiinuumii *soon I shall see him*.

yaaya *friend*, yic yaaya *my friend*, wanac yaaya *my friend absent* (?).

wanac (yaaya) *my* (*friend*) *absent*.

wacwac *bluejay*. Q kʷaʃkʷaʃ. Sound imita-

tive, normal sound correspondences do not apply.

waaɋiiq *frog*.

pii?ila-la *I speak* (BG).

pii?ilɬiina *stars* (BG), G -ɋina.

pii?isliluu-quɬ *mask*.

pii?isɛ́aaɥ, pl. piipisɛ́aɥ *blanket*.

pii?iɥanaq *eagle*. Cp. Q pixɬaadax *eagle*.

piiɬit *day* (G), piiɬ́it *sky*. Q ɸiɬitɥuu, piɬitɥuu *sun, moon*, piɬidu?uɬ *dawn*, piipiɬiiɬ *window*, ɸiɬ́ *light*, ɸiɬ́a-ɥu? *lamp* (*light inside*).

pinaquuluu *clear*.

piiɬiiɋʷaa?a-la yi ?aχuuquuluuɬuquula *I understand Chemakum*. Q piił- *know how, learn*, piiɬiiɬ *enough*.

piciiyi *porpoise*. Cp. Q puduuʃ *porpoise*.

piʃa *white* (BG). Q piixli?isu? *yellow*.

piiqʷaa?a *sweet*, piiqʷaqʷa *good taste*.

paa?iɥaa?a *yawn*.

paa?ati-, paa?atuu *bone* (BG).

paa?anisti-la *I am satiated*.

palii?it *flounder*.

pał-anχu-t *foot* (G).

paχʷa?a *hole*.

puu?usɬ́it *ashes*. Q puxuusu? *fine ashes*.

puu?uquu, pl. puucuuq *person, Indian* (BG). Q pu?uuq, pl. puɋuq.

puuɬuu?a *smoke*.

puqʷii *shoot with bow*, puquli *bow* (G), puquu?ulsilii-la *I catch birds*.

puuɋʷiχut *handle*.

puuχ- *blow*, puuχtii?iluu *wind*, puuχun *sail*. Q puxʷaal *drift, blown on water by wind*, puyuuxʷala?at *flag, it is blowing*.

ɸiłalqʷa *high water*, ɸiłasqa?il *flood tide*. Cp. Q ɸiɬ́- *full*.

ɸaa?aq *pipe* (BG).

ɸaa?aχuqsiluu-ɬaɬi-ma *he wants to strike us with stick*.

ɸaaciχtaa?at *braid of hair*. Q ɸaaχa? *braid hair or rope*.

ɸaχʷaluuy (haama?a) (*tree*) *is on water*.

ɸuuɬ́iɬiila *leaves fade* (translation illegible).

ɸuuɬi-sina-siliɯ-ɥii?i *water gets white in wind*, ɸuuɬ-quɬ *white point*.

ɸuχɛ́uu-qʷɬ *fish club*. Cp. Nootka ɸuxʷ-*halibut*.

mi?iis *four* (BG). Q ba?yas.

mii?isinaɥ *warrior*.

miiyuχuu *cup*, miliχuu *bucket*.

mitiiqʷsi?a *knothole*.

miłkʷu *hair* (G), Q buułku.

miɬ-ɬi-t *pillow*.

milaaχa-la *I open eyes*.

maa?ał *we* (BG).

maa?ałcii *antlers down*.

maa?aχʷaali-la *I sneeze*.

maaysqal *menses*.

maaɬɥa-, maatɬ́a-, maata- *large, great* (BG), maa?aɬuu *thick, stout*.

maanaʃ *tobacco* (BG). From Clallam smanʃ.

maaɬii?a *sleep* (BG), maaɬuu-quɬ *cradle*. Q ɬi?baa?t *sleep*.

maaći-ła *I am thirsty*. Q baćił *thirsty*.

masa *to smell*. Cp. sii?imi-la *I smell*. Q siiba?aa.

masɬalan *raven*.

maq-aałsii *look back*.

maqaɥa?a *jump over a thing*. Q baq-a?-waa *over* (*from one side to the other*).

maq-quu?a *afternoon*.

maqu?aalicii-kʷi-maayay *we feed them*.

maɋaa not translated, probably *Makah Tribe*.

maaɋas *female breast*.

maɋustiiχat *meet*. Q baɋuł.

muu?ilaacqs *talker*. Perhaps cp. Q -sɋʷa *speak*.

muu?alistiɥii-?i *it is boiling*.

muu?uctuu?u *thin, fine* (*thread*). Q buuciickʷa? *thin*.

muumuuma *a fly* (BG).

muulaaɋula *noise*.

muqɛ́aat *mouth of river*.

muuqlunt sg. and pl. *road, trail*, muu?uq-ɬim-t *door*. -lunt clearly written, tho -limt would be expected. Perhaps muu?q-ɬim-t *road, trail, door*.

muuɋʷa *crane*.

ti evidently Salish *the*: ti yiinuχti spiiw *the ice melts*, tiicuu yiiʃin *your leg*; tiliti ti kʷaxʷa *the box is full*.

tii?itat *winter* (BG), tii?itahaasqala *autumn*. Q tii?tat.

tii?iłaa?as, pl. tiitii?iłaa?as *husband*. Q ti?iyał.

tii?isćaaqʷal *to louse*.

tip- *vanquish*. Q tipi-liiʃ *give up, despair*.

timił *red paint*. Cp. Q ti?ii-ła-quł *face paint*, ti?ii- *to paint*, but Chemakum timił is evidently borrowed from a Salish language of the Olympian group, e.g. Chehalis tmł *red paint*.

titkʷunus *small owl*.

tiila *heavy*. Q tiila.

tiisiiy (ɥiiyt-qał) *to haul in* (*anchor*).

tisacii?i-lii *I carry on arm or shoulder*. Q tiʃa?aa *carry on shoulder*.

tiɥćuu-quł *staff*.

tiɥiinuu *mouse*.

tiɥan, pl. titiiɥan *slave*. Cp. tii-kʷaa?i- *in house*.

tii-kʷaa?a-t *in house*, tii-kʷaa?j-la *I enter*. Q tii?i *in house*, tiiwaa? *enter*.

taa?ila?ay *it is mine*, taa?a-la χʷałkʷaa?a-łii *my child*.

taa?apii?iil *married*.

taa?apat *to spin on knee*.

taa?atipasi-lii *to go to war*.

taa?aliɥ *long ago*, taa?ałɥi-lil *I am for a long time*. Q ta?aałaćis *to last*, taała?yikila *long time ago*.

taa?akʷuu ɬiticqʷaćila *almost noon*.

taa?a-kʷuu *stem of boat*.

ta?uuɬuu?ic *make fire* (not entirely legible).

tami-camɬi-t *breast*.

tamaa?a *my father*. Probably vocative form.

tałanχuu *girl menstruating first time*.

tałaalat-ic (kʷii?icat) *unfortunately you might be* (*sick*), B *I fear thou art sick*.

taakʷił-cii- *to do yesterday*, taakʷił-kʷii- *to do tomorrow*, huu taakʷiłcii *yesterday, tomorrow* (G), taakʷ-tiiya *evening*. Q taawił *another day*.

taq- *who? what?* taqiiyu *what?* taqaayuu *who?* (BG). Q taqa- *who?* tat *when?*

taχɬit, pl. tacaχɬit *bow*, taχunis *arrow* (G). Q taxʷhu? *bow*, taχut, taa?χut *bowstring, to string bow*, taxʷaa *to bend* (intr.).

taqʷ- *strike with stick or ax*, taquu?ul-quł, pl. tacquu?ul-quł *ax* (BG).

tuu?umisiluuluu *island* (BG).

tuu?utχuqʷa *blackberries*.

tuu?upa?a *bundle*, tuu?uupii?ilii *ball of thread*, tuu?up-anχu-t *anklet*, tuup-ɬi-t *headband for dance*, tuut- *to tie*. Q tuupatił *belt*, tuptiipilit *lariat*, tupɥqiidit *girth*.

tuu?usaa?a *tremble, shake*.

tupaat *difficult*. From Nitinat tupaat *ceremonial test*.

tuumi-ɬaaɥi-la *I make fist*.

tuumistiɥii (cicuuqła) *no* (*moon*), perhaps *dark moon*.

tuumaa?a *all* (BG).

tuus-quł *fire drill*. Perhaps cp. tuu?usaa?a. Q tuutisił *drill, fire drill*.

ɬii?iχʷa?a *cough*.

ɬipiliqł *ear ornament*.

ɬimiqł *fish* (BG).

ɬinćakʷica?a *young man*. Probably ɢaɬiin ćakʷiica?.

ɬiiła?at *widow, widower*.

ɬic- *half, halfway*. Cp. Q ɬuuɥuuɥa?wa *middle*.

ɬiisuqƛ̓ *name* (BG).

ɬiɥa- *know*. Q ɬaɥ- *know, find out*. Correspondence of ɥ to ɥ is not regular, therefore possibly from *ɬakɥa-.

ɬiɥu-qʷɬ, pl. ɬiitiiɥ-qʷɬ *arrow*.

ɬiiɥaacii *flea*. Q ɬiƙać.

ɬaa?aq- *walk over*, ɬaaqali-naχu-t *ladder*.

ɬaa?aqtiila *spring*.

ɬaa?aχuucsim *he cures man* (*shaman*).

ɬamikʷaaluq-łii *I make bed*. Q ɬaabisɬit *comb*, perhaps based on root meaning *to put in order*.

ɬałiilaluu *to sprout*. Cp. ɬaa?aqtiila.

ɬałćuułkʷa *one eyed*. Perhaps cp. ɬic- *half*, ɬiiła?at *widow*.

ɬaacałuuluu *blind*, ɬaacistii *disappear*.

ɬacit, ɬact *hand* (BG). Q ɬaaɥit.

ɬaaq- *buy, sell*.

ɬaq- *sit on*.

ɬaqaalucaɥił, pl. ɬatqaaluućaɥi *seal*.

ɬaqluu-sim-la *I missed* (*shooting*). Q ɬaqɬuu?udu? *to miss*.

ɬaq-suu?u-t *roof.*

ɬuula?aχ *mat.* Cp. Nootka ɬunaax *rushes* (from ɬunaax^{w}, therefore perhaps read ɬuula?χ^{w} for the Chemakum). The source of Ch and Nootka may be Salish languages.

ɬɖii-ns *skin,* ɬq^{w}ii-nis-?a *skin, bark rope.*

nihiɖ-ilt *tail of quadruped.*

niiya? *fire, fuel* (BG), niiy-spiis *make fire,* niiya?aɬɖ-ilt *fireplace.* Cp. Q diiqa? *smoke.*

niilχa: ɬiitk^{w}a niilχa *one hundred* (G).

niiq^{w}a alwers (?—illegible).

niiɖu-la *I get bark.*

naa?aqɬiiluu *to nod.*

nawa- *frighten.*

nanapʃɥi *swan.*

nanuu?u *bird* (BG). Q diidu?us *bird.*

naśuu?ul *fetch fire.* Q da?- *fetch.*

naχaa?a *very much.*

nuus- *give* (*a present, food*). Cp. Nootka ńuʃ- *give present.*

nuɖucɬ *joint.*

ntman yiʃin *my leg.* Not Chemakuan, probably Clallam.

ƛii?ica *pitchwood.*

ƛim?aquu *tide rapid.* Q ƛiiƛii?u?l *tide,* ƛii?wu *low tide.*

ƛiɖa *soft,* ƛi?it *weak, easy.*

ƛiiɖaa?a *green* (G ƛiinaɖa). Q ƛiiɖa-pat *bushes.*

ƛa?ay-la *I sit on it,* ƛaayaɬiita-luu *squat.* Q ƛa?ii *sit.*

ƛap-q^{w}ɬ *bed, platform for bed.* Q ƛapaa? *bed.*

ƛalap, pl. ƛaaɬilap *nettle.*

ƛactuu *scales.* Q ƛacti *scales.*

ƛak^{w}iiqk^{w}a *hunchbacked.*

ƛax^{w}a *get up.* Q ƛaxu *wake up.*

ƛaɖu-la *I break it,* ƛaɖu-lii-la *to break to pieces,* ƛaɖu-ɬiiqu-la *I break off point.* Q ƛaƛ^{w}al *break.*

ƛuu?umi-la *I am strong* (BG), ƛuu?um-iiqaɥ *courageous.*

ƛuu?ut *feathers,* G *wing.* Q ƛu?ut *feather,* ƛuu?ub *grass,* ƛuu?uu-ɬiiyił *leaf.*

ƛuu?usaa?a *fire crackles.*

ƛuuyiqs, pl. ƛuuƛuuyiqs *wooden kettle, box.*

ƛuupa?a-la *I am angry.*

ƛux^{w}a *hard, strong.* Q ƛux^{w}a *hard.*

łii?isqala *early morning.*

łii?iɥa?a *net,* łii?iɥɬiluu *he makes nets.* Cp. Q łik-, łiɥ *to wrap.*

łii?aɬχal *pull out hair with fingers.*

łiip- *hair, fur, down,* łiip-ɬi-t *hair of head* (BG), łipaa-ɖuu-t *beard* (G).

łiipa?a *fat* (noun).

łipaa?asilaɬ *I am always.*

łimii-sina-t *sea, salt* (BG).

łimii-k^{w}an-t *thumb.*

łim?uqɬ *meat.*

łimuu-?ilt *old person.* Q łibiti *strong, strenuous, difficult,* łapłii?yi *old, eldest.*

łiluuquu?ul *to cross water in canoe.* Q łilaaquul *cross stream, prairie, woods.*

łic-aanχu-sim *stumbled.*

łiictuu *blood* (BG). Q łiiɥti *blood,* łiila *bleed.*

łiɬitit *brains.*

łic?il *fish gravy* (illegible).

łiiɥaa?aɥ *dull.*

łiiʃiiluut *potlatch.*

łiiʃa?at *close together* (*mountains*), łiiʃay (ɬaɬału) *heap of* (*stones*).

ła probably Salish feminine *the:* ła taa?a *my mother,* ła ntaan *her mother.*

łaa?apaati-la *I sew.* Q ła?apa?a *sew.*

łaa?asa?a *black* (BG).

łaapi-?ilt *bark of tree.* Q łaapii?ɬit, ła?awit.

łapica *grass.* Cp. Q -łał *grass.*

łaapaχ^{w} *beaver* (G).

łapatiiχat-lii *my friend.*

łapiłii *strike with palm.*

łamis-ɬit *body* (G). Q -kis *body.*

łalii?il *the truth.*

łaɬiipaacat *quilt, blanket.*

łalk^{w}atχa *go into woods.*

łasɬ- *to comb,* łasɬit *a comb, herring rake,* łasɬuutqucilii-la *I catch herring.*

łak^{w}a-, ław- *two* (BG). Q ła?wa- *two,* ła, łati *again, still, yet, just the same.*

łak^{w}uutuut *calf of leg.*

łaq̓uu *eye* (BG). G daq̓uu.

łaax^{w}a *warrior* (G). Q łaax^{w}a? *common man.*

łuu?ac mii?i *whose country?* łuu?ac łimstan ?uk^{w}uu?u *whose house is that?* Probably Salishan.

łuu?uq^{w}alaała *split wood,* łuu?uq-qa-simila *my canoe is broken.*

łuuq̓- *perforated,* łuuq̓utaa?at *ear perforation,* łuq̓-uusi-t *nose perforation.*

łuχu-la *I spit,* łuχtii?il *saliva.* Q łaq̓aq̓a- *spit out, vomit.*

łuχpuuχuntqal *hoist sail.*

łłaał *once* (?) Perhaps not Chemakum, along with the following words for *twice* etc.: ʃaama, łiix^{w}ał, χuu?uʃinaał, mik^{w}aʯisaał, pilʯuyaal, ćuʯisaał, taaʯisaał, tiwu?iik^{w}aał, łχuli?aał; also łtaali słaanay *one woman,* with słaanay definitely Salishan.

łχli taans *that is his mother,* łχła minas yi?iyii *is that that man's child?* Salishan.

lii?iiʃimsiluu *he is crazy.*

lii?ix^{w}a?a *unsteady.*

limisti-la *I forget.* Q labiił- *to neglect.*

lit- *out of canoe, ashore,* litii?i-la *I go ashore,* liitk^{w}aqsχa-la *I carry load ashore.* Q liiti? *jump out of, go out of canoe.*

licuucqs-la *I lost it,* lilii?cili-la *I miss a road.*

liccii-k^{w}ii-la *I'll kill him.* Cp. Q lubu- *die.*

liqk^{w}aalał (k^{w}ii?icaa?at) *I think I am (sick).*

liχ^{w}aa?a *beat time while singing.*

liix^{w}litχal *shake head.*

la?atisi-la (yi x̌uuyiqs) *I put out of (box).*

laa?ał *I* (BG).

laa?act̓aatis *I lick.* Q laʯk̓iili?icil *licks the heel (the phase of the moon following full moon.*

laa?aʯi?ii *appear,* laa?ak^{w}uʯuq caa?ała?-aastuu *songs of sun.* Q laku?al *the sun rises,* laku *out of water,* lakuulil *sunrise.*

laa?ak^{w}ut *foot, leg* (BG). Q la?lawit.

la?u-spii?i-la *I throw water on fire.*

lahal *lehal gambling game.*

lata?at (caa?ak^{w}asqal) *to run (around),* laaʯii?ii-la *I run.* G laata?a. Q la?aw *walk.*

laya?aq̓a? *travel,* laq̓a? *run away, escape.*

lalisć aʯ *old things.*

laćiiq^{w}anac *snail.*

laʯak^{w}aa?asta *neighbor,* layaq̓a *visitor from another community.*

lak^{w}uł?iiluu *family.*

laaqastiʯi?ii *it snows.*

laaq̓ulii *to shake.*

luu?iluuq̓^{w}aq̓uuluu *water forms whirlpool.*

luu?aluu *vomit.*

luu?ut *outside,* luu?utisi-la *I throw out,* luu?uti-la *I am outside,* luu?wi-la *I go outside.*

luu?us *herring.* Perhaps cp. Nootka x̌usmit *herring,* but a direct borrowing from Nootka into Chemakum should give *łusmit.

luq̓u- *cut, cut off.*

luuq̓uutiisi-la *I cover face with blanket.*

luuq̓^{w}aa?ati-la *I drill a hole.*

cii?i-sqaluu *good, pretty,* cii?i-stuu *steady,* cii?iik^{w}uu?u-la *I work slowly.*

cii?ik^{w}aa?aluusilitis *it is my stepchild.*

ci?a *those* (G). Q ʯa?a *that.*

ciyil?aa-pat *salmonberry bush.*

ciiya *thou,* ciiyał *ye* (G). Q ʯi?id *thou.*

ciiya-?ilt *copper.* Q ʯayi?.

ciipiiluut *to throw disease into person.*

ciitaa?il *canoe sinks.*

citaʯaa?at *make canoe.*

citaqslii *to dig clams.*

ciłaas *six* (BG). Q ʯiłaas.

cilaatat *to sing,* G ʯiliitat. Perhaps cp. Q ʯalaalayu? *singing from the south, a ceremonial during winter months.*

cil?aaq^{w}at *new.* Cp. Q ćata? *new.*

ciicii?ał *abalone shell.* Q ʯiiksiduuda.

cicuu?ut *lie on ground.* Q ʯiʯ *lay down (ground).*

cick^{w}aqa *egg* (G). Cp. Q cick^{w}a?a-t̓ut *son, daughter.*

ciʃa?a *straight,* ciʃa-quu-t̓ay *right hand,* ciʃaa?at *steer.* Q cixa? *steer,* cixa *right, proper, straight.*

ciiχaa?a, *cataract, drop, to drip.* Cp. Q ʯiluut̓al *drip,* ʯiyiʯal *drop.*

ca?ak^{w}asqal, caa?ak^{w}asqal (*walk, run*) *all around.*

capiilał *silent.* Q ʜasli- *quiet.*

caatʜa-naanu?u *goose.* Perhaps read ca-ca?a naanu?u *the bird flies.*

caaƚiʜal *I give birth to a child.*

całqʷa *halibut.*

caca?a *to fly.* Q ʜaʜa?.

caaqs?is, pl. caaƚaqsis *father's brother.* Perhaps cp. Q ʜakʷƚtu? *relatives (man's).*

caqʷaa?a-, caqulii *to dig.*

caaχʷ- *bleed.*

caaχʷa-la *I wash myself.* Cp. xʷac-.

cuu?a?a *baby, child* (BG), cicu?uc *infant* (G). Q ʜu?uuck *child.*

cuu?ac kʷuu?iʃ wi Jim *my name is Jim.*

cuu?utuu-la *I go* (BG).

cuuq-sin-ƚi-t *black paint.*

cuχut, pl. cicuχuut *lake* (B, G cukʷa?a). Perhaps cp. Q ʜiʃu?u? *shallow water.*

cuχqilała *I am merry.*

cuχʷ-, cuχʷaa- *prevaricate.*

cq- *strike.* Cp. ćiq- *kill, dead.*

cquu?ul-kwant *first finger, seven* (BG), cquu?ulkʷant-kʷuu *seven canoes.*

ćii?actilaqł *small pox.*

ćiiyuuqt *fish line.* Cp. Q ćiip-ƚii-t *knot (in hair).*

ćiniikʷa *lightning.*

ćiina?a *guts.*

ćilikʷa- *up, go up.* Q ći- *up,* ćuluwa *go up.*

ćilaʜaa?at *dive.* Q ći?laƙil.

ćiluχʷa *swamp.*

ćicuqła *moon,* G cuuła.

ćiiʜa?a-la *I cry.*

ćiʃił *above, inland.* Q ćixi?ił *high,* ćixuuł *standing over.*

ćiiʃa-la *I hide myself.*

ćiq- *dead, kill* (BG), ćiqtin *poison.* Q ćiqa? *die.*

ćaa?am *morning* (BG).

ćaa?ałaa-la *I am warm.* Cp. Q ća?a? *cooked, ripe.*

ćaa?aχʷat *shake rattle.*

ćaapilii-la *I shut eyes.* Q ćap- *tight.*

ćańćan *humming bird.*

ćaaćiqastiʜii?ic *low water.*

ćaaʜiinała *mute.*

ćakʷiitaa-, ćakʷiica *man, male* (BG).

ćaąaatuu *earth, land* (G), ćaa?aqćit *dry (land).* Q ćiąaati *world, land, weather, sky.*

ćuuwa *water* (BG), cuuwaƚiinat *juice.* Perhaps cp. Q ʜi?luwa *water.*

ćuupa?a *the sun shines,* cukʷa *warm* (G).

ćuucima, pl. ćuućuucima *mountain goat.* From Nootka ćuʜma *mountain goat.*

ćuukʷa?a *half.*

ćuukʷat *suck.*

ćuuquu?ut *mast.*

ćuukʷaa?atćul- *to fish with hook,* cuuqʷaa?a-tquł *hook.* Cp. Q ciąaksqa *fish salmon in the river.*

sim-uusi-t *nose* (BG), sii?imi-la *I smell.* Q siiba?aa *to smell.*

sinaac-qʷł *mosquito* (BG). Perhaps cp. Q si?daapya *red fly,* si?idiis *gnat.*

sisł-alt *ear* (BG).

sisʜil *sky* (G).

siʜuχʷa *sour.*

siikʷulit *stomach,* G *heart.*

saa?aχa?a *rain* (BG).

saami- *to fell (tree).* Q saƚ- *down, downstream.*

sama?a-la *I lift,* sama?a *heavy.*

saastuu?as, pl. saaƚastuu?as *brother's wife when brother is dead, parent-in-law when spouse is dead.* Q ʃaaʃti *relative by marriage when link is dead.*

saʜa-la *I laugh.* Perhaps cp. Q sayaa? *like, care for, want.*

saćuuti-la *I pursue him.* Q sakaayil *advance crouching.*

saqʷ, siąʷa, G saaąʷa *bad.*

suu?aalu-quł *womb.*

suu?asukʷuu?u łimstan *that house.* Salishan, not Chemakum.

suu?uχʷaa?a *red* (BG).

supaasqal *bail, dip.*

suukʷum *cedarbark.*

suuχʷal *bladder.*

s?iitutamʃi *I should like to sleep.* Cp. Q -si?ii *sleep.*

spʜuu?u *berry basket.* Probably Salishan, also cp. Nootka pukuu?u, Kwakiutl pku *coiled basket.*

stχunuumici tic qʷaaqʷayii *I know that you are hungry*, stχunuumiciyap tic qʷaaqʷayalap *I know that you are hungry*.
sɬaaqin *invite to council*.

ɥii?ila- *to help*. Q kiyaa.
ɥii?itaćuut *on other side*. Q ki?iitu?ut *on other side*.
ɥii?iʃa?a *gum*. Q cixa? (Andrade, Notes on the Relation between Chemakum and Quilente).
ɥiminc qaaqan *why do you want to steal?*
ɥinaanuu, pl. ɥicinaanuu *dog* (BG). Q kadiidu?.
ɥicii?il *to dance* (BG), ɥici-sχaa-la *I kick*. Q kicaa *dance*, kic- *kick*.
ɥisit *forehead* (G).
ɥiɥuut *below*, ɥita-hakʷu-la *I go down*. Q yiyaawaa *beneath*.
ɥiɬi- *to jump*. See ɥici-.
ɥiʃtii?iluu *legend, myth*. Q kixtit *story*, kixɥii *tell a story*.
ɥa non-visible feminine *the:* quu?uq ɥa hii?iluuliqƛis *where is my canoe?*
ɥaa?a?a *five* (BG).
ɥaa?acisiti-la *I draw* (*?*).
ɥaa?aɥis?is, pl. ɥaa?aɥaa?is?is *mother's sister*. Q kaayiis-ɬut *parent's sister*.
ɥaayukʷa *snake* (BG).
ɥaawatiɥt *store*. Cp. Q yaaɥu-li *I sold it*.
ɥaapiliic, pl. ɥaa?apiiltuu?us *sibling's child*. Q yaapiliit.
ɥamχ-uusi-t *nose ornament*.
ɥanistiɥii (cicuqɬa) *new* (*moon*).
ɥanuuχʷa *to hang*. Q kad-ac *suspend*, ka?ada? *hang*.
ɥaaća *storm*, G *wind*.
ɥaaquu *prairie*, G *valley*. Q yaa?aqu *prairie*.
ɥaqtaaɥit *baton*.
ɥaχuɬ *on beach*. Q yaxʷa? *front*, yaxuɬ *ocean*.
ɥuu?ac ɬimstan *my house*, ɥu?aa?ac miiy *that is my country*. Probably Salishan.

ɬii?iɥiɬ *elk* (BG). Q ɬiikiɬ.
ɬiiy- *tie up*, ɬiiy-tqaɬ *anchor*, ɬiiyuunuu *knot*, ɬiiyaɬa *boat is at anchor*, ɬiitqa *kelp*. Q ɬiya- *to tie*, ɬiyćul *anchor*, ɬiilit *bridle*.
ɬitii-la *I go nearer* (*?*).
ɬiita?a *ten* (BG).
ɬiit-qʷɬ *snow* (BG).
ɬinii?is, pl. ɬaɬanis *younger sibling* (BG). Q ɬadi-ɬut *younger sibling, youngest daughter*.
ɬiiɥaa?a-tqʷɬ *stone hammer*.
ɬiɬitiit *lazy*. Q ɬiit, ɬiiɬiiti?.
ɬaa?a?an *rock, reef*, ɬaaɬa, pl. ɬaaɬaɬa *stone* (BG). Q ƛaƛa?, ɬa?aƛa *rock, stone*.
ɬaa?aw *light, not heavy*.
ɬaa?ap- *to warm*. Cp. Q ɬaayiɬ *start a fire*.
ɬap-sin-?ilii *boat capsizes*, ɬap-ićuutis *turn upside down*, ɬapiitit *knee*. Q ɬapaalis *double up, fold*.
ɬamiiʃ-la *I am cold* (BG).
ɬaamaɬ-ɬiiqʷ *curly headed*.
ɬaamaaχʷ *herring eggs, fish roe*.
ɬaaɬaa?at *gnaw*.
ɬaci-lii *I strike with fist*. Cp. -ɬac *hand*. Q ɬaćiil *hit with the fist*.
ɬaći- *throw*, ɬaaćii-quɬ *shoulder blade*.
ɬaaćaa?at *to drum*.
ɬaasa?aa-la *I am ashamed*. Q ɬaasaqɬi *bashful, ashamed* (*males*).
ɬaaɬuusiluu *woodpecker*. Cp. Q ɬuuɬuuxu-yaal *woodpecker*.
ɬupa?a *crooked*. Cp. Q ɬuuɬut *steal*, ɬuɬuutqʷal *cheat*.
ɬuqʷaa?a *neck-ring for dance*.

ʃintuus *virgin, girl* (BG).
ʃicuuɬuu?ut *it is cold*.
ʃiću-qʷɬ *stick to which cradle is fastened*, ʃiicl?iis-la *I rock child*.
ʃiis-li *stand* (G).
ʃiqaa?a-la (ɬiqaaɥiɬ) *I am almost* (*dead*). Perhaps cp. Q χadaapil *come very near doing something*.
ʃaa?aʃ-ɬiiqʷ *bald*.
ʃam?aɬ *claw, finger or toenail* (BG).
ʃaɬaa?at-qʷɬ *wedge*.
kʷii-, kʷii?i, kʷiiɬ, kʷaaɬ *one* (BG), kʷiicχal *nine*, from *one missing* (BG), kʷaaɬa-ɥi?u *twenty*. Q wii-ɬ, waaɬ *one*.
kʷii?icii?i *it is full*. Cp. Q wi?iqʷaɬ *crowd*.
kʷii?isi-la (ɬalii?il) *I say* (*the truth*). Q ku *speak*.

kʷɨɬiχumiliɨɬii *to take out my things* (?).
kʷiiɬat-quɬ *kettle* (G).
kʷiiɬχa *third finger*.
kʷiic-, kʷiicaa?at *sick*, kʷii?isii- *make sick*. Perhaps cp. Q kʷiica? *hungry*.
kʷicaapat, kʷucaapat *woman, female* (BG). Q wiisaćupat.
kʷiicaquu- *left*.
kʷaa?alχa *not, no*. Q wa-, wal, was *not*.
kʷayaa?uc ɬimstan *my house is far away*. Perhaps Salishan.
kʷapa- *weak*.
kʷaali-sti *dead*. Cp. kʷuula.
kʷaalaayɥ (qʷiilisis) *sharpened (the knife)*.
kʷaq- *scar*.
kʷaaq-ɬiɬuu?a *half moon*.
kʷuu feminine visible *the*.
kʷu?uulis, pl. kʷuciɬqa?as *wife*, kʷuuɬsin *husband and wife*. See kʷicaapat.
kʷumaatilii-la *I walk on water*.
kʷuniyutχ *Quileute*. Q kuliiyuɬ.
kʷu-ɬuu-quɬ *face* (BG).
kʷuula pl. *dead*, kʷuuli- pl. *strike*.
kʷuluukʷ-aaɬsi *look down*. Q ku- *down*, kulu?watχ *downward*.
kʷuɥuquu *sea egg*.
kʷuχuu?uqɬin χilaamin *I have lost my pencil*. Probably Salishan.

xʷiilm *thread, European rope*. From Salishan.
xʷaapaa?a *to whistle*. Q xʷapa.
xʷac- *to wash*. Q xʷac-ɬil.

ƛʷiisil-caa?atɬi (ƛʷiica?at) *yes you are (sick)*, ƛʷiisilii *yes, certainly* (BG). Q ƛʷii-siɬa i *indeed*.
ƛʷaatkʷuliiɬ *shark*.
ƛʷutaati-la *I steal*, ƛʷuukʷutaa?at *thief*. Q ƛuuƙut *steal*.
ƛʷusaam *dried herring*.
ƛʷuuχala *to cut salmon*.

qii?iiwa *old* (G).
qii?iχtin *sister*.
qiχtiʃ (ɥiinạm) *many (dogs)*. Q qaaxayu?ut *very much*.
qixʷ taakʷuɬ ?uχ kʷiicaa?at-ɬii *I was sick yesterday*.

qaa?itcuuɬ *tears*.
qaa?amat *to paddle*, qaa?amal *pectoral fin*, qaa?ilɥit *paddle*. Q qab *to paddle*, qaliyit *a paddle*.
qaa?atiil *medicine*. Q qaatil.
qaawc *potatoes*. Q qaawac. Also cp. Nootka qaawac, Tillamook qakc, Coeur d'Alene qigʷc.
qa?axʷuliɨtis, pl. qaa?axʷuulɨtu?us *grandchild*. Recorded with simple k. Q qaxuulit.
qapit *louse*.
qamii-ɬii (ƙuuyiqs) *I put things in (box)*.
qamaɬuu?iluu *foolish*.
qamaaɥit *belly*.
qamuuluu *clouds*.
qam?iiχa?it *armpits*.
qati- *just now*.
qaataa?aχit *basket*. Q qa?awac *cedar twig basket used for packing*. Cp. Nootka qa?uuc.
qaniq-tiiya *sun* (G qal-).
qanaamci *I hear*.
qaliikʷus *starfish, dogfish*. Cp. Q qasqayap *starfish*, Nootka qasqiip, Kwakiutl ɢazq.
qasi *and* (G): ɬiitkʷa qasi kʷiiɬ *eleven*.
qaaɥi *grass* (G).
qa- *in the future, bye and bye*, qacuukʷi-la *I shall bye and bye*, qaχaatil-kʷi-ca *thou shalt pay me*.
qaɬi-ca *where is your country?*
qaχuɬa *pine*.
qaχaakʷa *salmon* (G).
quu?uq *where?* quu?uc *how many?* Q qu- *where?* quc- *how many?*
quyii- *shut*, ququyii-ɬa?a *deaf*.
qumaa?a, pl. quccma *river* (BG).
qunaa?a-quɬ *lamp, torch*.
qulistiiyuu *olachen*.
quluu?ul *dancing leggings*.
quluuquut *at first*. Q qaluuku *first*, qaɬuul *first or new moon*.
quuɥi- *drink* (BG).

ɬii?inuukʷat *back*.
ɬiica, pl. ɬiiɬiica *blackberries, berries*. Q ɬiića? *berry, fruit, vegetable*.
ɬis- *wound*. Q ɬis-il *to hurt*.
ɬiiɥii?ii-la *I am tired*.
ɬiiɥsiil *expression*.

ɋiqʷ-anχu-t *shoe* (BG).
ɋiiɋu- *to chew*, ɋaqu-lii *I bite*.
ɋaa?ala?a *afloat*.
ɋawalii *to swallow*.
ɋamuu-ɋus *neck* (BG).
ɋaɬiin *small* (BG). Recorded k-.
ɋaan-ɬaaɥ-t *bracelet*, ɋani-kʷanu-t *finger ring*. Cp. Q ɋaɋu-ɬaayat *bracelet*.
ɋaɬiilii *to roast at fire*.
ɋałtiɥinis *parting of women's hair*.
ɋaciitaa?a?at *corner of anything*.
ɋaaɥaat *call*.
ɋaqu-lii *I bite*.
ɋaqtas *eyebrows*.
ɋaaɋina *crow*. Recorded kaakina. Sound-imitative word, similar to Nootka kee?in *crow*.
ɋaɋałuu *peep thru a hole*.
ɋuu?utuu *mouth* (BG).
ɋuliixʷa *thunder* (BG).
ɋciŋ *roots*. Clallam word.

χiic-quɬ *tooth* (BG). Q χiƛiil *bite*.
χaa non-visible plural *the*, χa non visible masculine singular *the:* quu?uq χa hiinii?ic *where is thy father?* quu?uq χaa ?uuɬii *where are my houses?* Cp. Q χi? oblique non-feminine definite *the*, χaχi *near*, indefinite in extension.
χaa?an- *quickly:* χaa?ana?a-la cuu?utus *I walk quickly*, χaa?anɬaɥiluu *I walk quickly*.
χaa?anaɬii *crab*. Cp. Q χalawu? *crab*.
χaa?aχa?a, pl. χaɬiχaa?a *sister's husband, son-in-law*.
χanit *head* (BG).
χalaχal *to scratch*, χalaχ *beaver teeth dice*. Q χali-l *cut*, χawaaʃ *scratch*.
χal-kʷan-t *finger* (BG), χaalχaaqstut *toes* (G).
χasaa?at *to whisper*.
χaɥa?a *ice* (BG). Q χaki?, χaaka *ice*, χak *freeze*.
χaɥuu *ginseng*.
χaɬii?il *to harpoon* (*salmon*).
χaaɬi-ɬiina?a *raspberry*.
χuu masculine *the*. Q χu?u visible near speaker.
χu?aɥ (qʷaaqʷayaχ) *are you not* (*hungry*)?
χuu?una?a *ebbtide*.
χupaa?at-qʷɬ *to carve*.
χumi-spii-tχal *go to fetch wood*.
χuɬi- *to fall*, χuɬistii *fall down from something*, χuɬiliila *leaves fall*.
χunuu *whale*. Compare Cp. Nisqually χdu *humpback salmon*.
χunuuqʷa *to moor*.
χunuqʷat *tail of fish*.
χulquɬ *son or daughter* (G).

qʷii?lis, pl. quqʷii?ilis *knife* (BG).
qʷii?ilaa?at *to paint*. Cp. Q kʷi?i- *to paint* (*the face*).
qʷa?aɬtim, qʷa?aytu *summer* (BG). Q qʷaa?ayat.
qʷal-, qʷalii *three* (BG), qʷaliikʷiyulu *thirty* (G). Q qʷa?laa, qʷa?li- *three*.
qʷaqa- *tear, torn*, qʷayiiqalii *to tear to pieces*.
qʷaaqʷayaɥ *hungry*. Q kʷiica?.
qʷaaqʷaa-la *I arrive now in canoe* (? not fully legible).

ɋʷiiti-ɬiiqʷ, qʷ- *gray headed*.
ɋʷiiɬisilii-la *I fall*.
ɋʷiila?a *go slowly*. Q ɋʷa- *slowly, calmly*.
ɋʷa?ilit *gull*, G *duck*. Cp. Q qʷaalal *sea gull*.
ɋʷaa?ay *long*.
ɋʷaa?ala?ay *it is warmer outside*.
ɋʷayii-kʷan-t *second finger, eight* (BG).
ɋʷanaɥ *sturgeon*.
ɋʷaɬili-la *I cook something*. Q qʷaɬa? *broil* (*by covering pot with leaves etc.*).
ɋʷasaa?a *vein, sinew*, ɋʷaas-ɬaɥ *vein in hand*. Cp. Q kʷa? *line, rope, mark*.
ɋʷaɋʷaa?iɬaaluu *killer*.

χʷiltim, pl. χaχʷiiltim *European*. Boas "borrowed from Clallam"—in Notes on Chemakum.
χʷaɬkʷaa?a- *one's child*.
χʷasχii?iitas tiɹiniil sqaalmiχ *you are a European, I am an Indian*. In a Salishan language.
χʷaaɥisluu?uɬis, pl. ciiχʷaaɥisluu?uɬis *parent-in-law*. Q χʷaayisluut.
χʷaaɋu- *to dry*.

NOTES AND REVIEWS

PAPERS FROM THE SYMPOSIUM ON AMERICAN INDIAN LINGUISTICS. (Held at Berkeley July 7, 1951.) Edited by C. D. Chretien, M. S. Beeler, M. B. Emeneau, M. R. Haas. Berkeley and Los Angeles: University of California Publications in Linguistics 10.1–68, 1953.

NORMAN A. MCQUOWN

This slim volume contains six (those of Hoijer, Rowe, Voegelin, Jacobs, Haas, and Bright) of the eight papers presented at a Symposium on American Indian Languages, organized by Murray B. Emeneau, and held under the chairmanship of Dr. S. A. Barrett. The Symposium formed part of the public lecture series of the Linguistic Institute, and was co-sponsored by the Institute and by the Department of Anthropology of the University of California at Berkeley. A. M. Halpern's Pomo, Yuma and Hokan Relationships and R. H. Robin's purely descriptive paper on Yurok are not included.

The appearance of this volume is an indication that the illustrious tradition of American Indian linguistic studies emanating from the University of California at Berkeley is by no means extinct. It is, furthermore, a reminder of the urgency of a revival, throughout the country, of this peculiarly American contribution to basic research in linguistics and to the study of the associated processes of culture as a whole. This note of urgency is sounded in the introduction (2): within a generation 'practically all the California languages now still spoken will be extinct'. The situation in California is by no means unique. Rowe (13) mentions the heavy mortality rate of South American languages: 'four centuries of European violence and cultural pressure have simplified the picture somewhat by extinguishing two or three hundred languages'. Jacobs (46) points out that in the languages of the Northwest Coast 'relatively little linguistic field research has been done since the middle 1930's'. Even where a considerable amount of work has been done in the past, improvement in descriptive techniques makes 'revisiting' mandatory, if we are to get the grounding which will make it possible for us to exploit large quantities of presently available material. In the name, then, both of furthering basic research and of economy of scientific effort, large numbers of American linguists should recognize their peculiar obligation and renew (or undertake for the first time) descriptive work in American Indian languages. Such full exploitation of descriptive materials, old and new, will then make possible sound historical work by somewhat more limited numbers of linguists-anthropologists and will make collaboration with anthropologists of other persuasions not merely stimulating but also substantively effective.

The initiative of linguists at the University of California in finding support for work in local languages suggests that linguists in other state universities might well approach their local administrations and their state legislatures in soliciting similar support. Critical cases of languages on the verge of extinction might be made the motive of special efforts. Perhaps appeals to civic pride might produce funds where more abstract solicitation of support for basic research fails.

In Some Problems of American Indian Linguistic Research, Harry Hoijer (3–12) provides us with a stimulating account of some of our major tasks. Of particular interest are his comments on the rationale behind Sapir's more sweeping linguistic classifications, based, not, in the first in-

stance, on systematic sets of sound correspondences exemplified in considerable quantities of fundamental vocabulary (which are necessarily available only for fairly shallow time-depths), but rather on 'submerged features that are of only minor interest to a descriptive analysis' and that may be 'expressed in each language by very different phonetic materials', but which, because they are deeply imbedded in the conservative core of structures whose surface features alone undergo rapid change, are particularly valuable indicators of historical connection at much greater time depths. Hoijer's oft-repeated insistence that in matters of linguistic classification there has really been nothing new since Powell must be irritating to the culture historian who eagerly grasps at each straw of classificatory chaff thrown out by the hasty intuitionist, but has the very salutary effect of stimulating the worker in depth to fill out his preliminary aperçus, however brilliant, with the golden grain of structural correspondences (not merely in the sound system, but also in the systems of all the other formal levels of the language), in such quantities of lexical material, both 'fundamental' and cultural, as are adequate as media in which to trace out the differential cultural history of the various submembers of a family of languages. Only when comparative and reconstructive work in depth has been carried out can one seriously examine the proposed 'phonetic and morphological' areas where 'borrowing among contiguous American language families' has been postulated. Not until one is capable of distinguishing on the basis of internal evidence the borrowed from the inherited material can one even approach the problem of the source of borrowing. Not until the borrowed structural material has been tagged as such can one consider the question of the extent of borrowing and of the effect of extra-linguistic cultural influences on it. The easy assumption of even mixture of languages up to this point can act only as a deterrent to sound work, beyond this point becomes merely an empirical question susceptible of precise answer. The questions of the generality of language type in the Americas, and of linguistic and coordinated cultural evolution, likewise become susceptible of precise answer with the results of such careful descriptive and historical work. Likewise needed in the Amerindian language field are (1) systematic guides or handbooks for field research and (2) a general introduction to the study of American Indian languages including (a) an inventory of phonetic and grammatical features, (b) an outline of proposed historical classifications, (c) a survey of field techniques and systems of transcription, (d) a critical presentation of the problems (solved and unsolved) of Amerindian writing, (e) an outline of questions of culture history and language history, and (f) a critical bibliography. We hope that Hoijer himself will undertake such a compilation.

John Howland Rowe's Linguistic Classification Problems in South America (13–26) presents a careful evaluation of the state of neglect in which the study of South American Indian languages finds itself (e.g. 80 languages and 20 to 25 families in Colombia alone—most of them unworked; no report on linguistic conditions in eastern Venezuela since Alexander Von Humboldt's), and a devastating, if at times somewhat intemperate, critique of past classifiers and existing classifications. Four men (Nimuendajú, Koch-Grünberg, Loukotka, and Rivet) have done most of the classificatory work in South American languages. The intuitive judgments of only two of them are likely to be sound (Nimuendajú and Koch-Grünberg). None of them had training in historical linguistic method. The actual methods used by Loukotka and Rivet make it extremely unlikely that their more ambitious groupings will eventually be confirmed. Rowe's suggestions as to appropriate methods, however, are also short of the mark. Linguistic classifications established

on the basis of lexicon (as against those based on grammar) are more apt to prove right and to be demonstrable in extenso, not because Powell and Kroeber were right, and Brinton and Sapir were wrong, nor because there is only one 'type of linguistic change for which we assume regularity' (namely, change of phonemes in lexemes). On the contrary, change on all levels is regular: all levels are systemically structured, and the observed regularity of change is due precisely to such systemic structuring. We choose phonology as exemplified in lexicon as our primary field of operations in historical linguistics only because it offers us the largest number of structure points in the largest number of structural interrelationships as probatory data. There is far less chance that the reflexes of the original structure (in the shape of interlocking sequences of sounds, corresponding from language to language, and surviving in random bits of lexical material scattered through the sizeable lexicon of any language) will be completely washed out with the passage of time, than that the less tightly knit structures on the grammatical level will succumb to time's ravages. For reconstructions with greater time-depth, however, one must inevitably go back beyond what can be worked out on the basis of lexicon alone, or lexicon confirmed by grammar, and one must rely, as Sapir did, on minutiae of grammatical structure. Such minutiae are reliable criteria of genetic relationship, not because they permit us to establish in extenso a well-rounded interlocking network of structural correspondences (both phoneme with phoneme, and morpheme with morpheme—the latter including tactical form with tactical form), but because they show us peculiarities of structure (either phonemic or morphemic) which statistically speaking are extremely unlikely to come about more than once in the history of human speech. One must, of course, either know the languages compared in the finest of structural detail, or have an extremely sensitive grasp of and extremely fine eye for such peculiarities, if one hopes to detect them in the vast mass of irrelevant material. If all that interests the non-linguist is the very highly probable fact of genetic relationship, then one can rely on the judgment of a Sapir (or a Greenberg) to provide such statements. If, however, one is interested in reconstructing in considerable detail a lexical and grammatical network which may be correlated with other aspects of the culture of the speakers of the languages one is comparing, then even a Sapir (or a Greenberg), not to mention considerable numbers of lesser folk, must apply the method of correspondence matrices (both of sounds and of forms). The former method is applicable at considerable time-depth, say 5000–15000 years. The latter, because of the desire for reconstruction in extenso, is necessarily more limited in its application, say to a time-depth of 500 to 5000 years. For a depth of under 500 years, somewhat different methods—those of dialect geography—are applicable. If one wishes to narrow the range in which statistical probability is the only criterion of genetic relationship (the 5000–15000 year range), one can do it only by the most thorough-going application of the correspondence-matrix techniques to materials available for the intermediate (500–5000 year) range (or to contemporary materials if no others are available). If, on the other hand, one wishes to bring greater reliability into the guesses resulting from the techniques of dialect geography, one can do it only by pushing down the lower (500-year) limit—by an even more thorough-going application of the correspondence-matrix techniques. Comparable points in two systems are not easy to spot—small differences are hard to observe when the systems are very close and small similarities are not readily apparent when they are very far away.

Rowe has done an excellent job of laying out the field of work in South American

languages and of pointing out the methodological inadequacy of previous attempts at classifying them. What is now most urgently needed, before tackling this area (or any of a considerable number of other gaps in our knowledge of language relationships), is a very careful laying out of the correspondence-matrix techniques which alone can serve to solve the problems of genetic classification. These techniques have been built up for the most part intuitively. It is high time they were made explicit.

In Inductively Arrived at Models for Cross-Genetic Comparisons of American Indian Languages, C. F. Voegelin makes an initial foray into another much neglected area. Tackling the problem of comparing pairs of unique structures, one with another, he points out, first, the need for greater agreement on the ordering of linguistic descriptions and on the terminology employed for labeling their parts. The practitioners of a mature science can no longer permit themselves the luxury of capricious ordering of the statement of their results, nor of personalistic choice of labels for referring to them. As Voegelin points out, all botanists at least start with the same end of the plant. After such initial agreement on descriptive order and on terminology has somewhat reduced the labor involved in bringing the parts of two unique systems into position for comparison, one must then face the second problem—that of restating the structure of each of the unique systems being compared in such a manner as to maximize their similarities and minimize their differences. One must, of course, be extremely careful, as Voegelin points out, to make no changes in either which are not explicit, and one must be able to retrace one's steps from the 'model' one has created to the unique structures on which it is based. Voegelin illustrates these procedures by tackling, comparatively, the phonemic systems of the twenty languages which appear in the Handbook of American Indian Languages. In order to make the results more easily visible, he limits himself first to the stop consonants: these produce nine 'models'. Each model subsumes one or more unique stop consonant systems and makes explicit, for the languages subsumed, their similarities. Confronting each of the base languages with the derived model reveals in the base languages certain peculiarities which require explanation. Voegelin deals more briefly, but in similar fashion, with other sub-systems within the total phonemic system. He is careful to point out, finally, that the general procedure is applicable not merely to phonological systems but also to all other systems and sub-systems within the linguistic structure. If we are ever to discover universals, and if we are to point up with real precision meaningful differences in human languages, we must follow similar procedures for all aspects of linguistic structure. The reviewer, however, finds the distinction which Voegelin makes between linguistic 'models' which (45) 'attempt to characterize a given language in parts' and linguistic types which 'attempt to characterize a given language as a whole' either (1) purely terminological (linguistic type = whole-language model) or (2) indicative of an irresponsible and arbitrary limitation placed on the procedures so ably illustrated with limited phonological material from the Handbook. I am sure that no one would claim that 'the sum of the models in a given language equals the language as a whole'. The whole is always more than the sum of the parts. But to hold back from the subjection of wholes to model-derivation is to refuse to face some of the more important questions to which answers may be obtained only by attempting to compare wholes: where, for example, in the structure of a polysynthetic language, does the 'polysynthetic principle' reside? With what other attributes of the culture of a people may such whole-language characterizations be compared and possibly correlated?

In The Areal Spread of Sound Features in the Languages North of California, Melville Jacobs touches on a problem (that of linguistic 'diffusion') whose solution, prior to the establishment of correspondence matrices for sound and form in the languages concerned, is impossible. After the establishment of such a testing-frame for inherited sounds and forms, it is purely empirical, that is, it is a question of where and to what extent and from what sources does the diffusion operate. The citation from ethnological evidence of presumably favorable circumstances for such diffusion (intimate and sustained commercial contact, position of superordination for the lender or sub-ordination for the borrower, frequent intermarriage between the two groups involved, and the like) does no more than make it more or less likely. Often, even under the most favorable exterior circumstances, borrowing is infrequent because of the incompatibility of the borrowing and lending structures. On the other hand, even in situations of unusual structural compatibility no borrowing may occur, because the exterior pressures for separation are too great. Interesting would be the question: how much and what kind of outside pressures are needed in order to overcome extreme structural incompatibility (e.g. English and Navaho)? What actually occurs in any given situation is a matter for empirical investigation. Why it occurs is a matter of careful weighing of all the factors involved.

Attitudes or convictions in the diffusion-independent origin controversy will get us nowhere. In the techniques of historical linguistics we have a tool by whose skillful application we can separate the independently originating sheep from the diffused goats. Why not use it?

In The Proto-Hokan-Coahuiltecan Word for 'Water' Mary Haas investigates the more remote relationships of Proto-Gulf by pursuing in the shapes of the word for 'water' a possible tie-in with Hokan-Coahuiltecan. Within Hokan-Coahuiltecan the derivations are plausible, although one would like to see further evidence of the generality of some of the assumed processes such as metathesis. Less plausible are the postulated connections of the Proto-Gulf *ak^{w}in(i) with Siouan (IJAL 17.77ff.) and with Hokan-Coahuiltecan *axi ~ *ixa (60). Haas' suggestion of a connection with Yukian uk̆ (62) is more plausible, as might well be a suggested connection with Proto-Mayan *ʔuk̆ 'suck, swallow' (Huastec ʔuǩ-). Most of the doubts or easy counter suggestions will undoubtedly be eliminated as the correspondence matrices for sounds and forms unfold and the generality of the processes postulated to explain the development of the word for 'water' is confirmed or rejected.

Encouraging likewise is William Bright's preliminary report Some Northern Hokan Relationships. When the new material being gathered by Olmsted for Achumawi and Atsugewi becomes available, we hope that Bright will be able to put it together with his own Karok and Shasta materials, and with Sapir's Yana and Halpern's Pomo materials, and come up with a set of well-rounded correspondence matrices for the whole Northern Hokan family. Not until Americanists begin to put some real flesh on the skeleton bequeathed to them by earlier workers will the techniques of historical linguistics begin to pay off, in terms of specific linguistic data susceptible of cultural correlation, and in terms of further development of those very techniques.

UNIVERSITY OF CHICAGO

POWER OF WORDS. By Stuart Chase, in collaboration with Marian Tyler Chase. New York: Harcourt, Brace and Company, 1954. xii + 308 pp.

STANLEY NEWMAN

In this, his most recent book, Stuart Chase combines his earlier interests—in economics (The Economy of Abundance, 1934), semantics (The Tyranny of Words, 1938),

group dynamics (Men at Work, 1945), social psychology and cultural anthropology (The Proper Study of Mankind, 1948), discussion techniques (Roads to Agreement, 1951)—with several new ones into a broad treatment of communication.

Part One, in the main, describes 'some interesting findings of communication engineers, brain physiologists, perception psychologists; findings of the linguists, the free-wheeling grammarians, the animal psychologists, the child psychologists, the cultural anthropologists, the physicists in so far as they are concerned with communication; of the mathematicians with their universal language, the various schools of semanticists (including especially an evaluation of Alfred Korzybski), the students of group dynamics and of the techniques of listening' (p. 10). Part Two applies these findings to several problem areas—expository writing, propaganda, the mass media, communication in economics, government, medicine, and education. The final chapter includes a summary of the book's argument, a list of suggestions for 'research badly needed now' in fields related to communication, and a plea for more critical thinking and talking. The volume ends with: 'Perhaps the next great revolution, following the industrial, will be the revolution in communication. This book is a small contribution to that end' (p. 292). There is an index and an eleven-page bibliography with comments on the sources.

Linguistics receives a complete chapter, which is followed by another on Words and World View, an exposition of the Whorfian hypothesis. Many of the basic notions of linguistics are taken up: speech, rather than writing or meanings, is the primary material of language; speech is composed of sounds; sounds are patterned; all languages, even those of technologically primitive groups, are complexly structured; languages change. Yet, some concepts important to the linguist are played down or omitted, while others are overemphasized. Phonemes and morphemes are given a quick brush-off, but kinesics, 'a sub-science' of linguistics which apparently intrigued the author, is repeatedly mentioned and discussed throughout the book. Change in language is explained in terms of vocabulary adaptation to culture, with no description of the less functional changes in structure. And the innocent reader is apt to get an overly sanguine impression of world-view studies as having achieved a degree of certainty and simple clarity which not even the most optimistic linguist would dare to envision.

The point scarcely needs belaboring that Mr. Chase's picture of linguistics is not a very exact replica of that held by linguistic specialists. But it would be a mistake to evaluate a book of this scope and purpose by the standards of any academic specialty, for specialists would fear to tread across the multiplicity of disciplines which the author covers with a truly enviable agility. His picture of each of the fields he discusses is a selective, even a personal, version of the truth rather than a grimly systematic attempt to convey the whole truth, which might be indigestible to the layman. Mr. Chase is a skilled and experienced publicist, and linguists who wish to obtain a wider public appreciation of their science could very well learn a thing or two from him.

One feature of his approach, however, is in the specialist tradition. He has obviously been careful to consult authoritative sources, semi-popular books written by outstanding scientists as well as technical works. If the reviewer may be pardoned a seemingly ungenerous observation, Mr. Chase knows better than to rely on the kinds of secondary sources he himself writes. In linguistics, for example, he cites and quotes from Sapir, Fries, Whorf, Trager and Smith.

Following the best tradition of modern scientific reporting, he goes even farther: he makes it his business to talk to research specialists and to try to understand, through first-hand contact, what they are doing. His discussion of perception psychology is made vivid by a report of his tour through the

Princeton laboratory and the Hanover Institute at Dartmouth. Communication engineering is enlivened by his description of how the Bell Laboratory's electronic mouse runs through its maze. For linguistics he visited the Foreign Service Institute, where he talked to Trager and Smith. The flavor of his direct reporting may be sensed from the following passage (p. 92):

> My wife and I sat in front of a blackboard in Washington while Dr. Smith demonstrated the way speech is analyzed, and how the patterns develop. He showed us what profound changes in meaning can come from the faintest change of intonation. The strange symbols of the linguists' code flew over the blackboard, usually somewhat faster than we could follow. But the general approach was clear, and gave us an exciting glimpse of what this new science is already able to do, and how important it is for any study of communication.

As the passage indicates, Mr. Chase does not assume the authoritative role of an insider expounding ideas. Rather, he identifies himself with the uninformed reader, whom he leads by the hand on an exciting voyage of discovery. He not only deals with ideas; he also describes people and places and things. In addition to the reports of his visits, anecdotes are generously sprinkled throughout the text. They give a sense of direct experience to his general discussion and sometimes provide comic relief from his more serious purpose. He is honest in confessing his failure to follow the more technical intricacies of some fields, and often he capitalizes on his own shortcomings as a source of humor, as in referring to his inability to withstand Claude Shannon's 'blizzard of equations' or his 'two years of reasonably steady application to bulldoze' his way through Korzybski's Science and Sanity.

One might readily expect that the author, in a personal book of this sort, would not manage to do equally well in the various disciplines he courageously tackles, nor would he regard consistency as a virtue in his implicit scheme of things. He does a better job, I believe, with linguistics than with communication engineering, and he is most successful with semantics and group dynamics. He describes the fields as he sees them now, reserving the right to change his point of view. His present treatment of semantics has gained in critical shrewdness over his book of sixteen years ago, The Tyranny of Words. And economics and politics, which were the areas of his earliest interest and accounted for his first half-dozen books, now receive a somewhat disillusioned treatment as prime exhibits to illustrate the sins of confused communication.

The organization of the volume is of the discursive, free-association type. Although the two major parts of the book are logically related, the chapters in each part and the sections within the chapters have a loosely joined sequence, like beads on a string. With this kind of organization there is no danger that the reader will be troubled with intricate threads of argument or find himself lost in the middle of the book. For the more inattentive reader, the author does not hesitate to repeat his main points frequently, to provide summaries for some chapters, and to end each of his main parts with an over-all summary. He makes extensive use of the enumeration device, familiar in education literature: there are twelve kinds of communication failure, five varieties of communication, eleven points in perception, six principles of group dynamics, three main functions of language, etc., etc.

These frequent enumerations, I feel, are out of place in a book of this kind. They have a dogmatic ridigity which conflicts with the casual organization of the author's approach, and they are apt to trick the naive reader into believing that the enumeration instead of being arbitrary, provides a completely determined coverage of the problem. I also wish there were a less intense and nervously paced excitement to the writing, less implication and statement that these scientific fields have just entered an amazing

era and are on the verge of a shattering discovery. This is not the authentic atmosphere of science. It may be that Mr. Chase, knowing his audience, employs these contrivances deliberately. Perhaps most of his readers are habituated to ticking off on their fingers a specific number of fundamental points about any problem and are not misled by this mnemonic ritual. Perhaps their attention, in a busy life of strains and pressures, can be held only by writing charged with a stepped-up voltage. But it seems a shame that these artificial devices of pedagogy and science fiction should be necessary in a treatment which is otherwise disarmingly honest and informal.

This is not a book, then, which is or pretends to be a blueprint of the fields of science relevant to communication. It is the book of a man who deeply enjoys intellectual exploration and is able to convey his own lively sense of adventure. It can be used as a fairly strong but non-toxic excitant by any layman who is willing to have his intellectual curiosity stimulated.

UNIVERSITY OF NEW MEXICO

LETTERS OF NOAH WEBSTER. Edited with an Introduction by Harry Warfel. New York, Library Publishers, 1953. Pp. xlvi, 562. $7.50.

RAVEN I. MCDAVID, JR.

Continuing the project which he undertook in Noah Webster: Schoolmaster to America, Warfel has presented the eponym of American lexicography as revealed in 188 of his public and private letters, ranging in length from a half-page note to Benjamin Franklin (44–45) to what amounts to a 54-page review of John Pickering's Vocabulary (341–94).

Although relatively little of this collection is concerned with linguistic questions, linguists—especially those in the United States—should know about it, because no man has done more than Noah Webster to mould American attitudes toward language. We may debate whether he moulded well or badly. We may admire him as an educational benefactor, as do many of the older Linguistic Atlas informants, who recall fondly their days in the blue-black speller. We may deplore his narrow-mindedness and his rigidity—as Thomas Pyles does in his Words and Ways in American English (1952). But we cannot ignore him. To the American public his name has become a synonym for 'dictionary', to the extent that there is continual warm controversy and occasional litigation between publishers who use the name WEBSTER'S as an element in dictionary titles.

This collection of letters will not alter any strongly held attitudes toward Noah Webster, but will rather help to put those attitudes in their proper perspective. It is once more apparent, if anyone ever doubted it, that Webster was not a linguistic scientist but a practical lexicographer. Less broadly cultured than Samuel Johnson, he designed his books with a view to the needs, not of the enlightenment of eighteenth-century England, but of a young republic whose success depended, as it still depends, on wide dissemination of knowledge. Perhaps in consequence of this attitude—and Webster was neither the first nor the last of whom the criticism is true—he tended to over-value both analogy and 'natural logic', and failed to give adequate weight to good usage. It is therefore not surprising that some of his observations, in his letters as elsewhere, appear naive, not only in comparison with what we know now, but in comparison with what we know was known in his day. Although Webster's lifetime saw the establishment of linguistics as a science, and in particular witnessed the discovery of the major outlines of Indo-European comparative grammar, these letters show no familiarity with the work of Rask or Grimm or Bopp, and only one passing reference (382) to Sir William Jones, who first called Sanskrit to the attention of European grammarians.

But one must remember that Webster prepared his works in an era in which the authors of textbooks had little rapport with linguists,[1] and that only in the last generation have we seen active cooperation between such organizations as the National Council of Teachers of English and the Linguistic Society of America.

If these letters fail to reveal any depth of linguistic knowledge, they indicate most forcefully Webster's energy and business acumen. A rugged individualist and an exponent of free enterprise in an era before book publishing became an organized American industry, he utilized many practical devices to promote the sale of his works—the legislative resolution, the letter to the editor, the solicited testimonial from prominent citizens. Though his fame rests on his dictionaries and his fortune arose from his spelling book, he found time to pursue many other projects, including A Brief History of Epidemic and Pestilential Diseases, and to contemplate others, such as the possibility of becoming literary executor to George Washington (39–40). Since Webster's livelihood depended on the sale of his works, he was understandably concerned over the chaotic state of American copyright laws, fought vigorously to protect his rights under each of the conflicting state laws, and advocated a Federal statute as the only sure protection for authors.

The collection also throws light on Webster's political and personal life. His solid middle-class conservatism is everywhere manifest. An undemocratised Federalist, he deplored the political slang of the Jackson period (521–22); shocked by the indecency of the language of the Authorized Version, he sought to expurgate the Bible (520–21). In a letter to Daniel Webster in 1834, he defended the Hartford Convention of 1814 against charges of promoting secessionism in New England (433–445); regrettably this collection contains no letters from the period of the Convention, and only one written during the War of 1812.[2] The letters to his wife, his brother-in-law, his daughter, and his sons-in-law reveal him sharing the sentiments and emotions of everyday life. In short, the picture of Noah Webster as given in his letters is much more human than the layman generally imagines.

There are some defects in the accompanying apparatus. Although the preface indicates that some of the letters have been published before, there is no way of determining which letters or even how many. The list of persons mentioned is incomplete: it does not include David McClure, one of Webster's correspondents (452) and probably unknown to most readers; it includes Thomas Jefferson, Samuel Adams, John Adams, and John Quincy Adams—but omits George Washington, Benjamin Franklin, and Alexander Hamilton. It does not mention that Hamilton was the son-in-law of General Philip John Schuyler, who appears in one of the notes (527) as 'John Philip'. But these are only incidental faults. The book is useful and interesting, as a picture of an important man of letters and of his times. Unfortunately, it is priced too high for the lean purses of most of the scholars who should be using it.

WESTERN RESERVE UNIVERSITY

LA DIALECTOLOGIE: APERÇU HISTORIQUE ET MÉTHODES D'ENQUÊTES LINGUISTIQUES. By Sever Pop. 2 vols.: vol. 1, DIALECTOLOGIE ROMANE; vol. 2, DIALECTOLOGIE NON-ROMANE. Université de Louvain, Receuil de travaux d'histoire et de philologie, 3e série, fascicules 38, 39. Louvain [1950]. Pp. lvi, 1334.

[1] See Priscilla Tyler, School Grammars to 1850, Western Reserve University Dissertation (MS), Cleveland, 1953.

[2] In this letter, which discusses his contemplated emigration to England, he gives no intimation that the United States is then at war with Great Britain. But of course Amherst was far from any theater of operations, and events would affect the community only slightly.

RAVEN I. MCDAVID, JR.

Pop has performed a heroic service in compiling his survey of the work in linguistic geography up to the middle of the twentieth century. Even the linguist who is little concerned with dialect problems in his own research must often discuss such problems for the benefit of his students. Up to now, if any such linguist wished to go much beyond the comparatively brief statements in Bloomfield or other general works, he has faced a painful task in even assembling a working bibliography. Now, he can find at least the basic information in Pop's monumental two volumes—the work of a dialectologist who could not find a handy survey of his branch of linguistics and decided to supply the need.

Following an introductory chronology of the development of dialect studies, Pop surveys in turn the Romance languages (French, Franco-Provençal, Provençal, Catalan, Spanish, Portuguese, Italian, Rheto-Romansch, Dalmatian, Sardinian, and Rumanian); then, in less detail, because his primary interest is in Romance, and his first intention was to deal only with Romance dialectology, Germanic, Celtic, Slavic, Finno-Ugrian, modern Greek, Albanian, Berber, Bantu, Arabic, Chinese, the languages of India, and Korean. For each language or dialect area he indicates the principal investigations—completed, in progress, or proposed—with information concerning the area, the method of investigation, the kind of questionnaire (if any), the kind of investigator, the kind of notation, and (where criticism is available) the significance of the project. A concluding chapter summarizes the lessons in method that one can derive from the experience of previous investigators, indicates a few of the contributions of dialectology to general linguistics, and pleads for the establishment (since realized, at the University of Louvain) of an international center for dialectology. Since La Dialectologie will probably be used most often as a reference book, it is gratifying to have not only a detailed topical index (Table analytique) and indices of relevant geographical and personal names, but also four chronological tables (by types) of published works on linguistic geography, three tables of works in progress or proposed, and a table of illustrations. For many of the sections there are detailed critical bibliographies.

The amount of factual information is almost stupefying. Obviously, whenever Pop could get precise details, he published them. A typical example: most of us have been content to know that the German Atlas is based on information from about forty thousand communities; Pop informs us that there were 44,251 responses from 40,736 communities, and gives the specific bibliographical reference for this information.

On questions of theory and method, Pop is not so fruitful. A disciple of Gilliéron, he is largely satisfied with the methods of the French Atlas and does not concern himself much with the newer techniques that have been devised to take care of situations which had not been anticipated when Edmont mounted his bicycle and rode out into the French countryside. But who could perform a like labor of compilation and interpretation (and under serious difficulties) and still find energy for simultaneously providing a fresh critical perspective. The theoretical interpretation can wait, and will be all the better for the facts which Pop has provided.

Understandably, there are some omissions. Even in the Romance section, he omits the 1946 proposal for an exhaustive investigation of Italian place names. He has no mention of the considerable work in Japanese dialects, perhaps because most of it has been published in Japanese.[1] And—as an American—I wish there had been more space devoted to both North American English and North

[1] See Robert H. Brower, A Bibliography of Japanese Dialects, University of Michigan Center for Japanese Studies, Bibliographical Series No. 2, Ann Arbor, University of Michigan Press, 1950.

American French. Each specialist will dredge up a few errors where Pop has touched on his specialty: e.g., the number of communities investigated in New England is given as 431, when it was actually about half that number—431 being the number assigned to the northernmost community in New Brunswick. And since the maps of most linguistic atlases contain a wealth of phonetic detail, some of the illustrations are too crowded to be useful.

Judging the work as a whole, it is almost incredible that one man could have compiled and organized so much useful information in so short a time with so relatively few errors. Pop has performed a unique service to linguistics by publishing La Dialectologie, by establishing the International Center, and by founding the journal Orbis as an organ through which dialectologists in various countries may keep each other informed. Thanks to Pop's indefatigable energy, future linguistic surveys should be spared many of the mistakes that have been made in the past.

WESTERN RESERVE UNIVERSITY

A NOTE ON ELICITING

BARBARA AITKEN

Drs. Harris and Voegelin in their article Eliciting in Linguistics (SJA 9.59–75, 1953) discuss the choice of pictures for eliciting without verbal suggestion by the linguist. May I, though an amateur in the subject, mention a plan which I used at Hano and found satisfactory. It gave me a vocabulary for certain subjects, and in the hands of a linguist I think it would have done more. An informant painted for me a number of dances and games of his own choice and dictated to me his own comments on his paintings. There was thus no temptation to translate from English, or to alter the order of words, though there may have been simplification.

Another device, but the vocabulary obtained was often archaic, was to record songs and ritual formulas which could not be altered to suit me.

A device used by a linguist, J. P. Harrington, in his early work, was to set Indians to playing games and record their comments as they played (see The Tewa Indian Game of Cañute, AA 14, no. 2, 1912).

Living in an Indian home allows one to hear much natural Indian talk; but in speaking to the guest the hosts simplify, and even adapt themselves, courteously or facetiously, to the guest's imperfect speech and comprehension.

HANTS., ENGLAND

SECOND REPORT ON THE ARCHIVES OF LANGUAGES OF THE WORLD

FLORENCE M. ROBINETT

As in the First Report (IJAL 20.241–47), this report is concerned with listing acquisitions in the Archives of the Languages of the World, together with certain information regarding each acquisition. The listings are in alphabetic order, according to languages within continental boundaries. The latter are shown under central heads for North America, South America, Africa, and Asia. Information on each acquisition is derived from auditing recordings at Indiana University, and from data given us by collectors; this is presented in the order of the following categories:

Language name
Dialect
Language family
Informant's name
Content
Duration
Comment on quality
Manuscript material
Collector's name
Collecting date and place
Medium of original record (tape, wire, or disc)
Dubbing date and speed

In this Report, however, we have—besides the usual continental groupings—two additional blocks of languages, also shown under central heads; these are Directed Collections, and Voice of America. For the former, more detailed information is given than in the continental listings; for the latter, less.

DIRECTED COLLECTIONS

Five directed collections—Gujerati, Tigriña, Cheremis, Finnish and Fanti—were recorded in the Archives, following in general the procedure described in Obtaining a Linguistic Sample, IJAL 20.89–100. Because all of these languages have been rather extensively studied, because two of the linguists served as their own informants, and because of time limitations, certain modifications in the procedural plan were made. The particular modifications made in each sample will be shown below.

(1)

For Gujerati, Maneck Wadia, a native speaker from Bombay, India, served both as informant and as linguist. Eleven hours (twenty-two reels) of tape were recorded at 7.5 on Pentron recorders. The quality of the recording is in general a little better than average; however, the speaker was a little too close to the microphone in a number of spots.

On Reel 1 the first fourteen minutes give fifty short texts in response to the pictures included in the First Semester Report. The next eight minutes contain Swadesh's 200-Word List, elicited in English. The rest of Reel 1 and all of Reel 2 contain short word lists and short texts containing words from each list, based on the Vocabulary List and Queries for Eliciting by Nancy Hickerson (Ms.).

The next seven reels give translations of the material on the first two reels. The informant played back the texts sentence by sentence, repeated each sentence on the translation reel, then gave each word in the sentence in citation form, followed by an English equivalent.

The last twenty minutes of Reel 9, and Reels 10 and 11 contain inflected forms and syntactic frames, as: *my house, your house, his house, my house is white, their house is red, there are eleven young people in our house.* Because the informant has had little linguistic training the organization of these forms was not as descriptively oriented as outlined in the procedures for task B in Obtaining a Linguistic Sample.

The next eight reels contain translations of the material given in the preceding three. The words and sentences are translated in the same manner as those in Task A (Reels 1–9).

For Task C, one reel of short autobiographical texts was recorded.

The last three reels give translations of this material, in the same manner as the translations of Tasks A and B.

The first sentence of each of the texts given in response to pictures on Reel 1 was written by Maneck Wadia in the standard orthography for Gujerati.

(2)

For Tigriña, Ytbarek Gebre-Egziabher and Mhrete-Ab Gebre-Selassie, native speakers from Ethiopia, served as informants for Nancy Hickerson, Virginia Wolff and James Kellar.

A total of more than eight hours (seventeen reels) of tape were recorded on Pentron recorders at 7.5. The quality of the recording is in general a little better than average; however, there are occasional background noises, echo effects, and variations in volume.

Since recordings of the two informants were made independently they are listed separately here.

Ytbarek Gebre-Egziabher's first reel contains fifty short texts in response to the pictures mentioned above, Swadesh's 200-Word List, and short word lists and texts based on the Hickerson list.

The next two reels contain utterance by

utterance and word by word repetitions and translations of the texts given on the first reel.

The fourth reel contains additional short word lists and texts from the Hickerson list, numerals and time expressions.

The next two reels contain the translation of the texts on the fourth reel.

Only nine minutes were recorded on a seventh reel, which contains inflected forms of the verb *to go* and several nouns, inflected for possession.

All the material from Gebre-Egziabher described above, except the nine minutes of inflected forms on the last reel was transcribed by Nancy Hickerson and Virginia Wolff, in part from the lips of the informant and in part from tape.

The first reel recorded by Mhrete-Ab Gebre-Selassie contains fifty texts in response to the pictures, the Swadesh 200-Word List, and a short text on the political organization and geography of Ethiopia.

The next four reels contain utterance by utterance and word by word repetitions and translations of the texts on the first reel.

The sixth reel contains short texts on the informant's town and on agriculture, expressions of time measurement, and independent pronouns.

The seventh reel contains inflected forms of the verbs *to be* and *to go*, possessed nouns, kinship terms, negative expressions, and short word lists and texts based on the Hickerson list.

The eighth reel contains additional word lists and texts from the Hickerson list.

The last two reels contain repetitions and translations of the texts on the seventh and the eighth reels.

Some of the texts in response to pictures on Reel 1, the numbers and time measurements on Reel 6, and a few of the texts from Reels 7 and 8 were transcribed from the informant by Virginia Wolff.

(3)

For Cheremis, Iwan Jewskij served as informant and Frances Ingeman served as linguist.

Supplementing previous work (IJAL 20.246), two and a half hours (five reels) of tape were recorded on Pentron recorders for the Archives. The quality of the recording is in general average, although at times the recording is blurred by recording at too high volume.

The first of these reels contains sixteen short texts and fifty-four omens.

The second reel contains fifty short texts in response to the pictures and most of the Swadesh 200-Word List.

The third reel contains the rest of the Swadesh list and twenty-three short texts.

The fourth reel contains two short texts and inflected noun forms in response to eliciting in English.

The fifth reel contains inflected verb forms, numbers, color terms, and a few short texts.

All of the Cheremis material on tape has been transcribed and translated by Frances Ingemann.

(4)

For Finnish, Eeva Kangasmaa, a native speaker of Finnish, served as both informant and lingust.

Six and a quarter hours (thirteen reels) of tape were recorded on a Webcor recorder at 7.5. The quality of the recording is in general a little better than average, although the speaker was a little too close to the microphone in spots, and the recording volume was too low in a few other spots.

The first three reels contain short texts based on the Hickerson list.

The next eight and a half reels contain utterance by utterance and word by word repetitions and translations of the texts on the first three reels.

The last reel and a quarter contain inflected forms.

The texts given on the first three reels were written by Eeva Kangasmaa.

(5)

A short sample of Fanti was recorded by Maneck Wadia with Herbert Brown, a native speaker, as informant.

Forty-seven minutes (two reels) of tape were recorded on Pentron recorders. The quality of the recording is a little better than average.

The first reel contains fifty short texts in response to the pictures and the Swadesh 200-Word List.

The second reel contains utterance by utterance and word by word repetitions and translations of the texts on the first reel.

VOICE OF AMERICA

Transcriptions of Voice of America broadcasts in several languages have been deposited in the Archives. Most are on eighteen inch acetate discs, a few are on twelve inch discs. The playing times range from three minutes to fourteen minutes and thirty seconds.

The languages included and the number of discs obtained for each are here listed: Armenian—6 discs; Czechoslovakian—8 discs; Estonian—22 discs; Finnish—16 discs; Greek—7 discs; Japanese—3 discs; Korean—9 discs; Lativan—14 discs; Lithuanian—15 discs; Serbo-Croatian—50 discs; Turkish—52 discs; Turkistani—5 discs.

The remaining language names are listed alphabetically under continental headings.

NORTH AMERICA

Coeur d'Alene; Salish; Reel 1: text; six and one-half minutes; quality average; Reel 2: text entitled "Little Mosquito"; four minutes; quality average; Gladys Reichard; before 1935; Columbia University; two twelve inch discs, special pressings; dubbed, Fall, 1952; 7.5.

Dakota; Siouan; Reels 1 and 2: texts; five minutes, four and one half minutes; quality a little below average; Franz Boas; before 1935; Columbia University; originals on ten inch aluminum discs; dubbed Fall, 1952; 7.5.

Dakota; Ogalala; Siouan; Rev. Vine Deloria; text; four minutes; quality a little better than average; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressing; dubbed Fall, 1952; 7.5.

Dakota; Santee; Siouan; Williams; Reels 1 and 2: text; four minutes each; quality a little below average; Franz Boas; before 1935; Columbia University; originals on ten inch aluminum discs, acetate copies; dubbed from copies Fall, 1952; 7.5.

Fox-Sauk-Kickapoo; Fox; Algonquian; Harry Lincoln; informant reads from a text on the Fox Wapanowiweni; eleven minutes; quality below average, faulty original, rubbing noise throughout; phonetic transcription and free translation in Truman Michelson, Notes on the Fox Wapanowiweni, BAE Bul. 105, 1932; Martha Huot Champion; summer, 1935; Tama, Iowa; original on twelve inch aluminum disc, copy on twelve inch acetate disc, two sides; dubbed from the copy with Newcomb phonograph and Ekotape recorder, Feb. 6, 1954; 7.5.

Karok; Phoebe Maddux; texts entitled 'Bluejay Myth', 'Deer Formula' and 'Sky Water Dog Formula'; three and one half minutes; quality a little better than average; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressing; dubbed Fall, 1952; 7.5.

Kwakiutl; Wakashan; Don Cramer; Reel 1: two speeches; four minutes and three minutes; quality a little below average; reel 2: text entitled 'Mad Speech', two minutes; quality average; Franz Boas and George Herzog; 1938, Columbia University; originals on two twelve inch aluminum discs; dubbed Fall, 1952; 7.5.

Nez Perce; Sahaptan; Archie Phinney; Reel 1: 'Sounds and Words' with introduction in English; two minutes; quality a little below average; Reel 2: 'Cayote Story'; two minutes; quality a little below average;

Reel 3: 'Ghost and Cayote Story' in four parts, followed by announcement in English; fourteen and one half minutes; quality average on the whole, though occasional noisy spots occur; Reel 4; 'Cayote and Rock'; four minutes; quality average; Franz Boas; Reels 1, 2 and 4: before 1935, Reel 3: June 6, 1930; Columbia University and Victor Laboratory, Camden, New Jersey; Reels 1 and 2 were on two ten inch aluminum discs, Reels 3 and 4 were on Victor special pressings; dubbed Fall, 1952; 7.5.

Oneida; Iroquoian; Thomas Lyon (also informant for Onondaga, q.v.); text entitled 'How the Oneida Gave Up their Customs'; five and one half minutes; quality average, some surface noise; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressing; dubbed with Newcomb phonograph and Ekotape recorder Feb. 6, 1954; 7.5.

Onondaga-Cayuga-Seneca; Onondaga; Iroquoian; Thomas Lyon (also informant for Oneida, q.v.); ceremonial speech; five and one half minutes; quality average, some surface noise; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressing; dubbed with Newcomb phonograph and Ekotape recorder Feb. 6, 1954; 7.5.

Tewa; Santa Clara; Tanoan; Edward Dozier; 'Blue Corn Girl—Two Versions'; forty-five minutes; quality below average; Harry Hoijer; January 24, 1948; original on wire; dubbed from Webster wire recorder to Ekotape recorder, May 31, 1954; 7.5.

Tlingit; Chilcat; Louis S. Shortridge; Reel 1: words and phrases; three minutes; quality average; Reel 2: text entitled 'Origin of the Mosquito'; two and one-half minutes; quality a little better than average; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressings; dubbed, Fall, 1952; 7.5.

Winnebago; Siouan; Sam Blowsnake; (1) a. 'fast prayer talk', prayer, one-half minute; b. same—informant attempted to repeat at normal speed, three-quarter minute; c. announcement of chief before meeting, calling people to the assembly, on horseback, one minute; d. 'fast prayer' before song, one-half minute; e. same slowed down, one-half minute; (2) text on the teaching of boys to go out and fast, 16 minutes; quality (1) a little better than average, (2) average; George Herzog and Amelia Susman; Summer, 1939; Columbia University; originals on aluminum discs, acetate copies, twelve inch discs, four sides; dubbed from the copies, with Newcomb phonograph and Ekotape recorder, Feb. 6, 1954; 7.5.

SOUTH AMERICA

Kaingang; Jules Henry as informant; two stories; two and one-half minutes and one minute; quality a little better than average; original on aluminum disc, copy on twelve inch acetate disc, one side; dubbed from acetate copy with Newcomb phonograph and Ekotape recorder, Feb. 6, 1954; 7.5.

AFRICA

Bolum; Ross Lohn; 'Spider and Tortoise (Riddles)'; five minutes; quality average, some surface noise, slight crack on record produced slight click throughout; Franz Boas; before 1935, Victor Laboratory, Camden, New Jersey; special pressing; dubbed with Newcomb phonograph and Ekotape recorder, Feb. 21, 1954; 7.5.

Fanti (see 5, under Directed Collections).

Jabo; Charles G. Blooah; content and duration: Reel 1: 'Story of Bat'; six minutes; 'Story of Lizzard'; four and one-half minutes; 'Short Text on Horn Titles'; one and one-half minutes; 'The Origin of White People', first rendition; two minutes; same, second rendition; one and three-quarter minutes; 'Story of Sun and Moon', first rendition; two and one-half minutes; same, second rendition; two minutes; 'Oath', first rendition; one and three-quarter minutes; same, second rendition; one and three-quarter minutes; 'The Lord's Prayer'; one-half minute; Reel 2: 'The Animal Race (Buffalo and Snail)', first rendition; six

and one-half minutes; same, second rendition; six and one-half minutes; 'Word Forms'; five and one-half minutes; 'Short Paradigms'; three-quarter minute; 'Word Forms'; two and one-quarter minutes; 'Short Paradigms'; 1 minute; Reel 3: 'Short Paradigms'; two and one-quarter minutes; quality average for most, with some surface noise on all; the quality is a little less than average in spots; George Herzog and Manuel Andrade; 1931; University of Chicago; original on ten inch aluminum discs, acetate copies; dubbed from the copies, with Newcomb phonograph and Ekotape recorder, Feb. 21 and 28, 1954; 7.5.

Kru; Thorgue Sie; 'Kru Word Phrases', monosyllabic stems with tone contrasts; text entitled 'The Turtle'; five minutes each; quality average, some surface noise on both; Franz Boas; before 1935; Victor Laboratory, Camden, New Jersey; special pressings; dubbed with Newcomb phonograph and Ekotape recorder, Feb. 21, 1954; 7.5.

Mandara; 'Words and a Story'; five minutes (one and one half minutes for words, three and one-half minutes for story); quality average; original on twelve inch special pressing; University of Berlin; dubbed with Newcomb phonograph and Ekotape recorder, Feb. 28, 1954; 7.5.

Tigriña (see 2, under Directed Collections).

Iganda (language name unknown); text entitled 'Letter'; five minutes; quality average, some surface noise; Franz Boas; before 1935, Victor Laboratory, Camden, New Jersey; special pressing; dubbed with Newcomb phonograph and Ekotape recorder, Feb. 21, 1954; 7.5.

African language (language name unknown, locale in Africa unknown); text, tone contrast pairs; two and one-half minutes, two minutes; quality average, slight surface noise; before 1935; Columbia University; Franz Boas; original on twelve inch aluminum disc, copy on ten inch acetate disc; dubbed from acetate copy, with Newcomb phonograph and Ekotape recorder, Feb. 21, 1954; 7.5.

ASIA

Cheremis (see 4, under Directed Collections).

Gujerati (see 1, under Directed Collections).

Persian; Indo-European; text entitled 'Kol Abdol and the Bear'; twelve minutes; quality average, some surface noise, higher surface noise in second half; phonemic transcription and interlinear translation by collector; Stanley Newman; during World War II; Library of Congress, Division of Music, Recording Laboratory; original on twelve inch acetate disc, two sides; dubbed with Newcomb phonograph and Ekotape recorder, Feb. 6, 1854; 7.5.

INDIANA UNIVERSITY

A NEW JOURNAL

The Department of Modern Foreign Languages of the University of Kentucky announces the inauguration of a journal to be called General Linguistics, edited by John A. Rea, with John L. Cutler and George P. Faust as associates. Two issues are definitely planned for the first year, and a third if sufficient interest and support are forthcoming. Linguistic papers offered at the annual Foreign Language Conference will be published, but most of the content will be articles independently submitted. The journal is intended as an outlet for studies in comparative linguistics, historical linguistics, descriptive linguistics, etc. Your support is earnestly requested both as contributors and subscribers at $2.00 a year. Checks for subscriptions should be made payable to the Department of Modern Foreign Languages.

RECENT PUBLICATIONS

General Linguistics

Bazell, C. E. Linguistic Form. Istanbul: University of Istanbul, 1953. 116 pp.

Caudmont, Jean. La influencia del Bilingüismo como Factor de Transformación de un Sistema Fonológico. Rev. Colombiana de Antropologia 2. 207–218, 1954.

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Matthews, W. K. Marr's Analytical Alphabet. Archivum Linguisticum 5.65–74, 1953.

Prieto, Luis J. Traits oppositionnels et traits contrastifs. Word 10.43–59, 1954.

Vogt, Hans. Phoneme Classes and Phoneme Classification. Word 10.28–34, 1954.

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Caudmont, Jean. Fonología Puinave [An Indian language of Colombia, S. A.]. Rev. Colombiana de Antropologia 2.265–276, 1954.

Flórez, Luis. El Castellano y las lenguas indígenas de América. Rev. Colombiana de Folklore, no. 2, 278–292, 1953. [Reprinted with English translation, Bol. Indigenista 14.90–98, 1954.]

McIntosh, John. Activities of the Summer Institute of Linguistics for the Year 1953. Bol. Indigenista 14.149–155, 1954.

Newman, Stanley. American Indian Linguistics in the Southwest. With comments by C. F. Voegelin, Harry Hoijer, and Morris Swadesh. AA 56.626–644, 1954.

Swadesh, Morris, and others. Time Depths of American Indian Linguistic Groupings. AA 56.361–377, 1954.